> landing is gained; and still the demon ☞ is urging us upwards. . . . A few more moments of toil, and our exertions are crowned with success; we sink down exhausted at the door of the Daguerreotype room. No need now for the demon ☞ to point out what we have discovered. Ha! ha! we have discovered that photography is, indeed, High Art."

A great number of caricatures, anecdotes and stories, most of them very amusing to read, appeared in the papers and periodicals of those days, showing the various and sometimes very unexpected reactions of the public to photography. Although people as a whole were very "Daguerreo-minded", they had hardly more than an inkling of the working principles of the technique. One photographer was asked by a distant would-be client whether it was necessary to attend personally to the sitting or whether a description of himself, sent by post, would be sufficient. Another sitter wanted first to be assured that there was no danger of his being poisoned by the various vapours in which he would have to be "enveloped", and an anxious mother asked whether her child could stand the strain of "being exposed to the rays of the camera for such a long time". The greatest difficulty was, of course, to make the sitters realise that it was essential to sit absolutely motionless for many minutes.

John Werge, in his book, tells of a young lady in Yorkshire who, in 1842, went a considerable distance to sit to an itinerant Daguerreotypist for her portrait.

> "She was placed before the camera, the slide drawn, lens uncapped, and requested to sit there until the Daguerreotypist returned. He went away, probably to put his 'mercury box' in order or to have a smoke, for it was irksome—both to sitter and operator—to sit or stand doing nothing during those necessarily long exposures. When the operator returned, the lady was sitting where he left her, and appeared glad to be relieved from her constrained position. She departed and he proceeded with the development of the picture. The plate was examined from time to time in the usual way, but there was no appearance of the lady. The ground, the wall, and the chair whereon she sat were all visible, but the image of the lady was not; and the operator was completely puzzled, if not alarmed. He left the lady sitting and found her sitting when he returned, so he was quite unable to account for her mysterious non-appearance in the picture. The mystery was, however, explained in a few days, when the lady called for her portrait, for she admitted that she got up and walked about as soon as he left her and only sat down again when she heard him returning. The necessity of remaining before the camera was not recognized by that sitter."

Not all clients were quite as mobile as this young lady, but many photographers found it necessary to post up notices to the effect that "if the sitters move and spoil the photograph, they will be obliged to make another *rendezvous* and pay a second deposit, the first being forfeited."

The peak period of the Daguerreotype was the decade between 1845 and 1855. It was probably the most colourful and most enthusiastic period in the whole history of the camera. In our days photography, as far as the public is concerned, is a mass commodity, in the 'teens it was a popular hobby, in the 'eighties and 'nineties an attempt—mostly unsuccessful—to find a short-cut to "art", in the 'sixties a kind of moral and social obligation, but in the early 'forties it was pure adventure, for photographers and sitters alike, with the whole world looking on as an excited audience.

Between 1850 and 1860 the Collodion process, based on TALBOT's negative-positive technique, made its appearance and this marked the end of the Daguerreotype which could no longer hold its ground against the faster and more adaptable competitor.

The Calotype

Parallel with the Daguerreotype, though far from reaching the same degree of popularity, evolved the "Calotype", TALBOT's technique. It was, as already mentioned, based on the negative-positive principle.

A sheet of ordinary writing paper was used as base for the emulsion which was applied to the paper by coating one surface first with solutions of silver nitrate and iodide of potassium and later, immediately before use, with gallonitrate of silver. The paper was now sensitive to light and could be exposed in the camera obscura. After exposure, the negative was either placed in a dark box where it became visible after some time without further interference, or it could be developed in a solution of gallonitrate of silver. This was followed by fixing, washing and drying. The negative had to be waxed in order to become transparent for the copying process. A paper, similarly coated, was then placed on top of the negative and printed out to full strength. It needed only fixing and drying.

This was the method TALBOT employed at the time when his process was patented. He has described the growth of his invention from its very first beginnings in his *Pencil of Nature* (London, 1844).

> " . . . One of the first days of the month of October 1833, I was amusing myself on the lovely shores of the Lake of Como, in Italy, taking sketches with Wollaston's Camera Lucida, or rather I should say, attempting to take them: but with the smallest possible amount of success. For when the eye was removed from the prism—in which all looked beautiful—I found that the faithless pencil had only left traces on the paper melancholy to behold.

VICTORIAN PHOTOGRAPHY

CLASSICS OF PHOTOGRAPHY

A History of Photography in Photographs

Edited and Introduced
by
A. KRASZNA-KRAUSZ

THE FOCAL PRESS

VICTORIAN PHOTOGRAPHY

Being an Album of Yesterday's Camera-Work
by
WILLIAM HENRY FOX TALBOT, DAVID OCTAVIUS HILL,
JULIA MARGARET CAMERON, ROGER FENTON,
FRANK M. SUTCLIFFE
and Others

Selection and Commentary
by
ALEX STRASSER
Fellow of the Royal Photographic Society

LONDON and NEW YORK

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a limited edition of two hundred and fifty
numbered copies was printed
and bound in vellum

In compiling this second volume of the series "Classics of Photography" I depended again largely on the Permanent Collection of the ROYAL PHOTOGRAPHIC SOCIETY. *May I once more express my sincere thanks to the Society's Council, Curator and Secretary. Grateful acknowledgement must also be made to the Director of the* SCIENCE MUSEUM, *Kensington, who allowed us to reproduce two specimens of* TALBOT'S *early work, and to* MR. JACK H. COOTE, F.R.P.S., *who solved the difficult problem of re-photographing the Daguerreotypes and most of* D. O. HILL'S *original prints, presented in this book, without losing any of their essential qualities.*

A.S.

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> *". . . That huge object by the window was perhaps a wardrobe. Next to it stood, conceivably, a chest of drawers. In the middle of the room swam up to the surface what seemed to be a table with a ring round it; and then the vague amorphous shapes of armchair and table emerged. But everything was disguised. On top of the wardrobe stood three white busts; the chest of drawers was surmounted by a bookcase, the bookcase was pasted over with crimson merino; the washing table had a coronal of shelves upon it; on top of the shelves that were on top of the washing table stood two more busts. Nothing in the room was itself; everything was something else."*
>
> Description of Elisabeth Barrett's bedroom
> in *Virginia Woolf's* book: *Flush.*

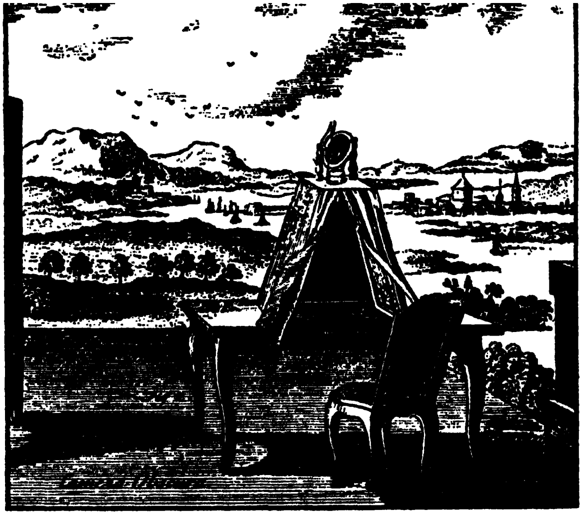
BINDERY [illegible] 1955

Somehow, the foreground of what we call "historic perspective" is always less clear than the distance. There seems to be so much detail to side-track our eyes and our views. To make things worse, prejudice and sentiment conspire to draw curtains of haze in front of times just gone by, blurring the deeds and habits and problems of our fathers and grandfathers. Pulling at one wing of that curtain usually stand those resolutely young people whose dogma is disbelief and deprecation of anything that implies yesterday. Their good-natured opposite numbers, who would charmingly misinterpret any mothy smell for hallowed tradition, are likely to pull just as determinedly at the other wing. It is all prejudice or sentiment; and although liking to assume an air of logic, it is not a reasoned attitude nor a very reasonable one. We might call that curtain of haze a curtain of "soft focus" from the way it fogs our view of Victorian photography; but more important than giving it a fitting name, is to draw it aside.

Once we have done so, we cannot fail to see that Victorian photography is far from being simply a matter of neglect and mis-use of photographic principles and possibilities as they are preached to-day. Nor is it such a glorious example—to be lastingly upheld—of how to escape nobly to an Olympus of camera dreams from the lesser truth of snapshot reality.

Rather, we shall see that Victorian photography was quite a gallant struggle with the crude yet brittle tools of an undeveloped technique—that it failed to dare some tasks whose solution is now so obvious to us, and yet took others in its stride with a verve that leaves us aghast—that, all in all, it is a perfect mirror both of the life and spirit of its period. What it shows and how cannot be compared with the illuminated Codices of the Middle Ages or the paintings of the Renaissance as a superhuman feat of Art, but it probably is comparable with any chapter in the history of arts as a classic human document of a not too ambitious yet most industrious age.

Camera obscura for tracing landscapes from the eighteenth century. Only the head and the hands of the draughtsman had to be brought into the dark tent. The mirror reflected a rather faint picture in natural colours onto the drawing screen. These drawing instruments were much in use in the second half of the eighteenth century, leading to the desire to hold and fix the picture by chemical means.



The birth of Photography was like that of a prince. There were brilliant speeches in the French Chamber of Deputies, the Senate and the Academy of Science. There were formal reports to foreign monarchs, diplomatic courtesies and many medals. There were articles in the Press—some of them informative, some of them wildly exaggerated, some of them just stupid. There were prophetic utterances and short-sighted jeers. There were thrills and excitement in the salons and in the streets when, after impressive divisions in all the high Councils of State, France, with an inimitable Gallic gesture, bought this "source of a new Art within an old Civilization" to offer it as a present to the world. It was a very official miracle.

As a matter of fact, our prince was quite a common type of child and the miracle not such a very spectacular feat of an invention either. Its elements—the reflection of the outside world inside a light-tight box and the ability of some substances to undergo changes when impressed by light—were known of old. The idea of the Camera Obscura can be traced back to Aristotle, Ibn el Haitam and Roger Bacon among many others, and it was minutely described by Leonardo da Vinci. The principle of light-sensitive materials kept Phœnicians, Greeks and Romans busy, and was a matter of deep concern to mediæval alchemists; once chemistry got under way in the eighteenth century, one photo-actinic substance after another was recognized and examined. By the beginning of the nineteenth century, there is quite a bewildering number of scientists and cranks who leave distinct tracks of their own, leading more or less directly towards the juncture where the photographic image simply had to be caught and fixed. It is a threshold crowded with people. Yet, only few cared to cross it. The age had more than one tempting diversion.

Of potential inventors there were many. Quite a few of them advanced claims of priority good enough to establish around early photography the type of argumentative literature that will flourish around early anything. The hint that the pageant of the Paris invention was a cleverly staged diplomatic manœuvre is by no means missing. Still, it does not really matter too much from which side the inventor of photography entered or who he was. The stage was set for him and his audience was waiting. Not only were the props ready, but also it was the right time to put over the tricks. Watts' steam-engines had been doing all sorts of jobs for the last fifty years; Stevenson's locomotives were running in England, France and

Germany; Faraday was experimenting with electro-magnetism. Science invaded engineering and engineering invaded life. People began to take mechanics for granted and seemed even prepared to welcome it as a tool of Art. Their standards were changing and most of them had hardly any standards at all. Merchants were promoting themselves to big business men, craftsmen were becoming manufacturers and the masses at the base of society were being organised into fairly regular earners of very little money. A social structure of such new dimensions was very much in need of new arts and new playgrounds.

One is tempted to speculate whether photography had the right type of inventors able to visualize even a fraction of what was "expected" of it and how that could be achieved. More likely than not, the job was bigger than the men. *Louis Jacques Mande Daguerre* was a clever showman, who relied much on advice from those of greater scientific knowledge than himself and who had a good deal of luck at the decisive moment. *William Henry Fox Talbot*, on this side of the Channel, was a diligent gentleman-scientist of manifold cultural interests, with no care for display and no taste for hurry. It seems very much in keeping with the complexities of human psychology that while the businessman Daguerre's invention was given free to the world, Talbot the scientist should stubbornly cling to his patent, thereby confusing quite effectively the technical issues involved.

The French invention was incapable of development, but it conquered and held the world for twenty years. The English invention, presenting the negative-positive process, met the basic needs of present and future but remained just an insular practice for quite a long while. In addition, scientific research was somewhat parochial in those days and technical progress necessarily without co-ordination, indeed almost accidental. It happened that both inventors and users of photography were so much pre-occupied with chemical and optical problems that equally obvious mechanical needs got almost entirely overlooked. Cameras and equipment remained stereotyped and unwieldy for decades. Their size and their weight, on top of the essential limitations of the early processes, put the heaviest brake on the imagination and ambitions of the best men who went out for pictures made by light.

Thus photography and photographers had to be content with subjects within easy reach: portraiture, staged genre scenes and quiet landscapes. All attempts to reach beyond these involved a tough struggle with uncontrollable conditions of both technique and the outer world. This is one of the reasons why such few early photographs exist to bear witness of Victorian life unposed and its real background. Those we have do not seem to show any serious attempt at individual expression on the part of the photographer. Apparently he had to be satisfied with any result. It seemed senseless to pioneer in the jungle with a pen-knife. One had to be content with cutting a few branches and having a bit of a fire in the house. What was the use of trying to get away, anyhow?

There was no practical need for any but private photographs. The great markets for photography did not yet exist. True, the very same social and economic conditions that prepared the way for photography caused new forms of journalism to appear almost simultaneously. *Charles Knight's* first Penny-Magazine was less than a decade ahead of photography, and the first illustrated weeklies—*The Illustrated London News*, *L'Illustration* of Paris and *Die Leipziger Illustrierte Zeitung*—followed it within a mere four years. There, no doubt, were the prospective outlets for the photography of the future. Still, they lacked as yet the technical means of reproducing photographs. They were confined to old-time manual methods of picture printing: engravings and woodcuts. Photographs were used sometimes as models for the engraver, who could and did correct their contents, add or leave out according to his own taste. Alongside of the photographic processes proper, photo-mechanical reproduction processes were developing rather slowly. There was still almost fifty years to go to the practice of half-tone printing. Meanwhile, the photographers felt little temptation to try their hand and their cameras on subjects so much beyond the daily routine that kept them alive. Thus photographic documents of the news, the social conditions, the face of the people as a people in Victorian days are rare indeed. What there is has none of the typical qualities of Victorian photography. It would have been impossible to achieve them.

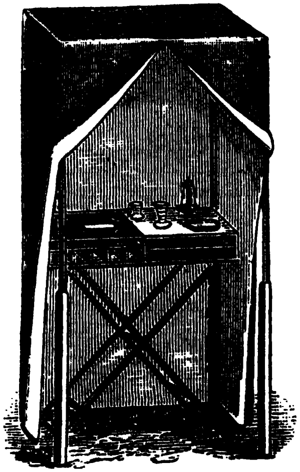
The man who still struggles with his tools will have but little care for quality. Only when and where technique becomes a matter of course and the handling of the tools settles down into a flexible habit, will the craftsman be left with sufficient strength and initiative for anything additional to merely finishing the job. You cannot choose your words as long as you are out of breath.

There are famous exceptions to any such rule, to be sure. Many a masterpiece owes its very existence and all its expressive power to the desperate efforts of the artist in an all-out struggle with tool and matter. There is something awe inspiring—because there is something so human and yet final—about a piece of work that allows you to feel the last touch of a tool that had no time left to smooth off and play about. All the convincing directness of primitive arts seem to have this functional charm and so has the work of geniuses at the start of great developments. So has the opus of *David Octavius Hill*, the giant primitive of Victorian photography, who rang out every single tone his awkward instrument would yield. Hill did not know the limitations of his camera or did not recognise them or just did not care. He certainly did not make efforts to fight shy of them, or polish things shiny that were not shiny by nature. Hill was not of his age. (The apparent smoothness and elegance of Hill's pictures as they are known by many, is due to over-publication of beautified prints made at the close of the nineteenth century.)

Most of the others, perhaps all the others, were more self-conscious. They were inclined to stick to subjects and working conditions that would not strain their technique and would not challenge their strength. Rightly or wrongly, they felt that it is less embarrassing to appear mediocre than to end up as a failure. So they chose tasks according to the lights of those who made the cameras and according to the examples of the grown-up Arts all around them. The technique confined them to studio work or outdoor work that was modelled on the lines of studio work. They quite naturally could not help squinting over to those elder studios, where the rich experience and the wise traditions of hundreds of years seemed to be accumulated. Thus it happened that Victorian photography became to a degree an imitative art, with the unavoidable consequence that it always lagged behind its own time and never quite succeeded in achieving true originality.

Not one of the styles cherished by Victorian photographers was started by photography. It was much more a matter of photography using up the remnants of all the styles that were going out of vogue and were left over by the painters. Photographers took pictures like miniatures while miniatures were dying out; they loved the postures of Classicism long after *Reynolds*, *Gainsborough* and *Raeburn* were gone; they became Pre-Raphaelites fifteen years too late; and when they turned Impressionist, *Constable's* and *Turner's* work belonged to the past and even the much later Continental version of that outlook was being transformed into something very different by the appearance of *Cézanne*. How hard they tried to catch up! How hard they had to try! The raw results of photography were in definition, tone, perspective unpictorial all over. Successively, a whole range of essentially manual—that is, non-photographic—processes had to be introduced to translate the picture into pictorial terms, mostly after it had already been taken. Less and less did photography resemble its own live image, but often enough it looked like the corpse of some painting.

"Our new portable dark-tent has the great convenience of permitting its being put up in any room, outhouse, or even in the garden or courtyard. It is easily fixed, and as easily taken to pieces and stowed away."—(*Practical Guide to Photography*, 1887.)



It is easy to talk uncharitably about these developments and show impatience with the people leading them. But—once more it is well to remember—cameras, lenses, sensitive materials of then and now have but their names in common. Photography was very much confined to subjects already tackled by the older Art and tackled so much better. The temptation—it could almost be said the necessity—to try what looked like an improvement, to try any means promising improvement, was only too near at hand. Last but not least, our scruples about false appearances, our objections to masquerading in another Art's clothes, were alien to and wrong by Victorian psychology.

At a glance and from a distance the Victorian age appears very mature, respectable and ceremonious: an age of traditionalism, security and unchanging values. Look at it closer and you will find a lot of grain in that smooth negative. The Victorian age was not mature at all; it was not even grown-up. It was an age of endless technical inventions, of changing manufacturing processes, of growing markets and dwindling frontiers, of great wars and enormous social problems in the making. It was an age of unconfessed revolutions, an age never really at ease. All that dignified behaviour was just camouflage. There was a constant stream of newcomers in every walk of life; never before lived such crowds of parvenus. To appear more than or at any rate something different from one's background, habits and thoughts was quite the rule. Karl Marx looks in his photograph like a successful businessman dressed up as Father Christmas. Everybody dressed up and everything got dressed up. People were keenly attracted by all the technical wonders around them and at the same time slightly ashamed of these things. They admired the practical efficiency of engineering and religiously deplored its lack of soul. Their uneasy consciences cried out for the handmade loveliness of faded centuries and they put Corinthian capitals on top of iron columns, built railway stations to look like Gothic cathedrals and took up photography to turn it into painting.

As long as photography remained a job of professionals, such tendencies were to a degree controlled by sober considerations of everyday business. The general level of that professional photography was not too high; its modes of presentation were inclined to be dry; what there was of individualism showed itself as retouching—but nobody could accuse these professionals of extravagance. That came with the amateurs. They took the lead after the dry plate was invented and technique became simplified. The genuine blessings of this turn are facts of history. Photography was rescued from the unimaginative and stuffy atmosphere of the glass-house and brought out into the open air. It came closer to nature although it hardly became more natural. These amateurs were honest and enthusiastic idealists. They were children of their time, who found moral satisfaction in turning romantics after business hours and over the week-ends. They were happy to be allowed to escape into another world in which they had no customers and no responsibilities. They were socially independent from the system they were busily reforming—almost like Greek gods going places and doing marvels while having a bit of fun, too. This is why and how they succeeded so fully in creating an almost mythological, dreamy atmosphere in the latest and perhaps most impressive phase of Victorian photography. Their pictorialism—the hazy eyesight of their sentimental cameras that now literally painted gems of photographs of a romanticised world—became a lasting heritage. At the same time, the manual techniques initiated by them developed into such elaborately individualistic methods of re-thinking and re-forming the results of the camera that the language of photography—that once colloquial means of expression—was in danger of being restricted to the precious and knowing tone of an intellectual conversation.

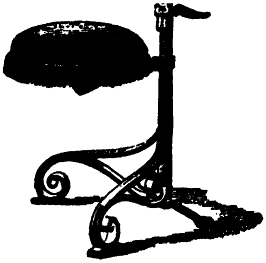
This is not the fault of the Victorians. It is not their fault that, long after the Queen died and her era gradually became first a living and then a fading memory, Victorian photography somehow refused to stop being alive. The real Victorians were much too warm-hearted and, in a sense, much too religious and, first and foremost, much too genuinely progressive to approve of having their style mummified and abstracted into mesmerizing formulæ of how "artistic" photographs ought to look. They would have shuddered at the idea of the camera being turned into a patent mincing machine into which you put the meat of life at one end to obtain a guaranteed mash of dreams at the other. Still, the greatness of Victorian photography can be measured even by this enormous shadow cast by it far into our days.

Whatever the technical limitations that oppressed Victorian photographers, however extravagant the means they used to overcome them, whatever paths they chose to follow—they left behind a marvellous trail. It may seem to us that it led into a cul-de-sac—but only because the

Victorians went right up to its end. This perhaps is a further proof of their genius. In the history of arts and literature the very greatest figures are in the habit of showing us in such an unmistakable and final manner where their path leads and how far it goes, that their directions of way must appear to be fully explored and exploited for all time. Nothing will remain there for lesser disciples to seek. So, too, Victorian photography is a chapter closed. Admirable as a showplace, it should have a traffic sign at the entrance: no thoroughfare for motor-cars, miniature cameras and other vehicles of twentieth-century speed.

A. KRASZNA-KRAUSZ.

"*The head-rest is an instrument against which many have a prejudice, but this is merely because it is at times used without discretion. We often hear people who have been photographed talking of having had their heads 'clamped up in a machine'. There is no excuse for doing this, as it is quite unnecessary. When the rest is used, the sitter should be first posed without any regard to it, and then gently supported by the instrument at the head and waist.*"—(*Practical Guide to Photography*, 1887.)



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"The explorer furnished with his photographic apparatus, which is now constructed in such a manner that it can be used with ease in any part of the world brings back with him from his travels documents invaluable, because no one can deny their accuracy."—(*Gaston Tissandier*, 1876.)

The growth of photography from birth to what we may call "maturity" took place within a period of sixty-odd years. It is probably a mere coincidence that the sixty years in question were those of Queen Victoria's reign, yet a coincidence which will appear less accidental if we remember that during that time the world underwent its great change from agriculture to industrialism, from the age of the artisan to the age of the machine. Seen from this viewpoint, the invention and growth of a mechanised kind of art where a little machine acts as an intermediary between the artist and his creation fits well into the pattern of the evolution which took place during that period.

Queen Victoria ascended the throne in 1837; the officially recognised birthday of photography is the 19th August, 1839. Before this time—apart from the last few years—only isolated and far-between attempts had been made at producing sun-created pictures which were more or less vaguely recorded by historians of science but left no records of their own. In 1901, the Queen died and at that time photography had reached the stage at which we see it more or less to-day, with most of its present-day ramifications and techniques almost fully developed. After that date, the progress of photography was a matter of degrees rather than of principles.

To put it differently: in 1837 elusive shadows, indistinct and only vaguely resembling their substances, haunted the inside of the cameras obscuras luring Daguerre and Talbot on and on along a path which led into a bewildering world of light and darkness until, two years later, the two men caught these shadows by the neck and did not let them go any more. Sixty years later the same shadows, fully subdued and under control, were instrumental in the successful research work of other men who chased other elusive phantoms in the even more bewildering worlds of molecules and atoms on one side of our universe, of galaxies and nebulæ on the other, and of all the sciences which lie between these extremes.

The most important milestones reached and passed by photography on its journey through childhood and adolescence are listed in the table on the following pages. The first two columns show the technical progress, the third the application of photography to science, industry and public life. The whole represents the background for the activities on the æsthetical field which we are accustomed to associate with Victorian photography. The object of this book is the attempt to delineate the fascinating interplay of technical and æsthetic problems during the period in question.

"This Detective-Camera is made box-shape and neatly covered with brown linen-lined paper, and tied with string like an ordinary parcel, of which it has the exact appearance. The object is to disguise its real use, and to permit a Photograph to be taken without raising the slightest suspicion. It is so constructed that it is always in focus for an object six feet or more distant; after slipping the plates in from the holder, which may be done in daylight, it is only necessary to touch a spring to obtain a sharp Negative; the Plate is then returned to its holder."—(*Practical Guide to Photography*, 1887.)

1837

BEFORE 1839

ISOLATED EXPERIMENTS IN MECHANICS, OPTICS, CHEMISTRY
LEADING TO
INVENTION OF PHOTOGRAPHY:

A. THE DAGUERREOTYPE (PRODUCING A POSITIVE WITHOUT NEGATIVE)
B. THE TALBOTYPE (THE FIRST NEGATIVE-POSITIVE PROCESS)

HYPO AS FIXING AGENT

	NEGATIVE TECHNIQUES	PRINTING TECHNIQUES	FIRST APPLICATIONS
1839		Salted and chloride papers used until 1850	First objects photographed: buildings, general views Main application: portraiture 1839: First photo micrograph (eye of fly) 39: First travel photographs (Malta, Smyrna)
1840	The Daguerreotype uses silvered copperplate as a base — only unica obtainable — no possibility of evolution. Dies out completely in the sixties The Talbotype process uses waxed paper as negative. In use until approximately 1865 47: Glass found suitable base to carry emulsion	43: First enlargement	40: Barometer readings recorded 41: Sun and moon photographed 41: Sound first recorded photographically 42: First documentary photographs (big fire in Hamburg) 44: First ethnological photographs (tribes in Brazil) 45: First pictorial photographs (Hill)
1850	51: The wet plate (collodion) process (in general use up to the seventies and still used for special purposes) 51: First portrait in electric light 53: Stereoscopy 55: A collodion dry plate process discovered 59: Experiments with magnesium flash-light	50: The Albumen paper 51: Bromide first used for making developing papers 52: Photo-gravure principle discovered 54–55: The carbon process invented 58: The gum process	51: First sales catalogue illustrated by photographs 51: Tele-photography 52: Photo-lithography 53: Stereo-photography 55: Alpine photography Museum first catalogued by photography First war pictures (Crimea) 56: First military photo school (Chatham) 57: First star photographs 58: Aerial photography 59: First topographic camera
1860	60: First retouching method introduced		61: Photography first used for election

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	69 : The Tri-colour process	About 65 : Combination printing 66 : The Woodbury type 68 : The gelatino-chloride (printing-out) paper, as still used to-day	paintings 65 : Photography in criminology and for police work 66 : First successful under-water photographs
1870	71–73 : The dry plates (gelatino-bromide) coming into general use 73 : Orthochromatic emulsions experimentally produced (manufactured not until 1888) 74 : The focal plane shutter	About 73 : The carbon process in general use 73 : The platinotype 73 : The bromide emulsion on paper comes into use	About 71 : Photographs first reproduced in newspapers 72 : First photographs of star spectra (spectral analysis) 74 : First use of photography in detection of forgeries (cheques, documents, etc.) 74 : Sailors in Royal Navy instructed in photography
1880	80 : The dry plate manufactured commercially 84 : The Iris shutter (down to 1-100 sec.) 87 : Flashlight photography introduced 88 : The roll film manufactured 89 : The Zeiss anastigmat 89 : The reflex camera	80 : The photogravure used commercially 83 : The chloro-bromide (gaslight) paper 89 : The carbro process	80 : First photographs of star nebulæ (Orion) 81 : First stage photographs 85 : Halftone process in newspaper printing 88 : Photography used for checking results of horse racing 88 : First high-level photography from kites
1890	94 : The additive colour process 94 : The anti-halo plate 94–95 : Cinematography 95 : X-ray photography 95 : Panchromatic emulsions	94–96 : The gum-bichromate process comes into use	92 : First background-projection in theatres 95–99 : Beginnings of press photography
After 1900	04 : The Autochrome colour process	04–05 : The oil process 07 : The bromoil process 11 : The bromoil transfer process	Further ramifications into almost every sphere of public and scientific life

WITH THE CAMERAS OF YESTERDAY

The Birth of Photography

Two men can claim to have discovered the art of writing and painting with light, subsequently called photography. These two men were Louis Jacques Mandé Daguerre and William Henry Fox Talbot, and the completion of their researches took place early in 1839. This may lead to the belief that there was a combined effort or at least a mutual interchange of ideas and knowledge, but the position was very different from that. Both men worked independently, the first in France, the other in England and they did not even know of each other's existence until their inventions had been announced. Their approach, their methods, their qualifications were also entirely different; so were the settings in which their work took place, and so were finally the techniques in which their labour resulted.

Daguerre was a stage-designer and the inventor of the "Diorama"—a permanent exhibition in Paris presenting large panoramas, the realistic appearance of which were due to ingenious lighting effects—Talbot, a scholar, expert in many scientific fields. Daguerre experimented in the somewhat unreal surroundings of his illusionist's workshop, Talbot in the sober atmosphere of his chemical laboratory. Both men were equally relentless in the pursuit of their aims; yet, in the end, it was sheer luck which helped Daguerre, according to his own statement, to discover the magic formula, whereas Talbot's achievement was the logical and direct outcome of his researches. Daguerre's invention was spectacularly broadcast with the French Academy of Science and the French Government as godfathers, Talbot announced his invention in the exclusiveness of the Royal Academy. Daguerre presented his process as "a free gift to the world", Talbot built a fence of patent restrictions around his discovery. No wonder that pride of place went to Daguerre and that everyone, within a few months, was bewitched by the miraculous "Daguerreotypes", while Talbot and his "Talbotypes" passed almost unnoticed for a long time.

Yet, it was Talbot who, to all intents and purposes, was the true father of photography as we know it to-day. Daguerre's invention, triumphantly as it started and continued for many years, was by its nature bound to lead to a dead end. The Daguerreotype, produced by the camera as a single opaque positive, was unsuitable for other reproduction methods than etching or re-photographing. The Talbotype, however, based on a negative which could be turned into a limitless number of positives, established the principles of our present-day photography.

It needed a long time before the public realised the advantages of TALBOT's method: the abandoning of his patent rights in 1852 unfortunately came rather late, at a time when revolutionary improvements on his own process were already on the way. Up to the middle of the 'fifties, DAGUERRE's technique dominated the world almost completely and those who peruse the literature of that period will find an abundance of articles, lectures and essays on the "Daguerreotype" process, while relatively little was written or said about TALBOT's invention. Any survey of the early photographic methods, therefore, must of necessity begin with an account of DAGUERRE's technique.

The Daguerreotype

One of the most surprising facts connected with the "Daguerreotype" was the speed with which this technique gained popularity. The invention had hardly been made public when Paris, and a short time later the other big cities of Europe and America, swarmed with people trying to become "sun artists". This is the more surprising as the process bristled with difficulties. A characteristic of the early techniques was that the photographer was not only compelled to prepare all the necessary chemicals himself, but also his own sensitive materials. It was not until about 1880 that factory-made plates and papers became available.

In the case of the "Daguerreotype" the necessary work consisted of four distinct stages. The first was to subject the copper plate, used as a base, to a series of cleaning processes by bathing it in various solutions. The next thing to do was to sensitize the plate by exposing it in a dark box to the vapours of iodine. The third stage consisted in taking the photograph, and the last one of developing the plate by putting it into another box filled with mercury vapours, as well as of fixing and drying it.

All this reads easily enough, but detailed descriptions of the single processes involved fill textbooks of considerable size. It must also be realised that there was no tradition behind photography in those early days, and while quite a number of books were almost immediately available to give some sort of guidance, the directions given were usually of a very general nature and a great number of vital points were left to the interpretation or even imagination of the reader. Wealthy would-be "Daguerreotypists" went to Paris and took a kind of course from DAGUERRE himself, other people managed to pick up some hints from photographers already better acquainted with the technique, but the average beginner had to work from scratch and had to find everything out by himself. In his case the attempt to become a photographer was really a heart-breaking venture.

A vivid account of the difficulties involved was given by JOHN WERGE in his book *The Evolution of Photography* (London, 1890). The scene is set in 1845.

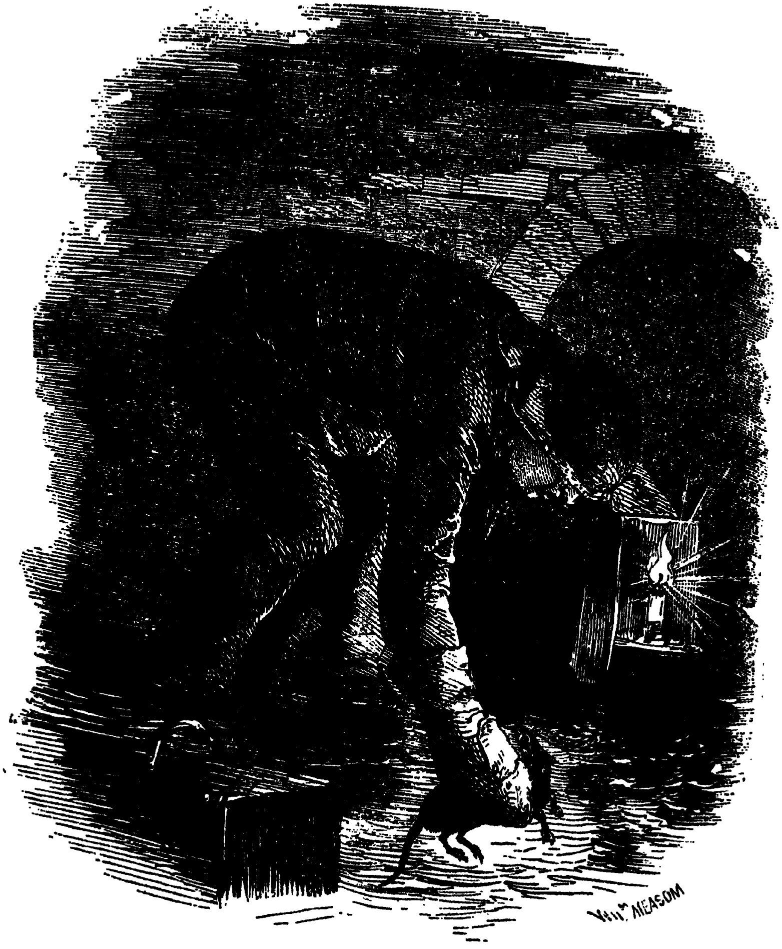
"I had resolved to possess an apparatus and obtain the necessary information, but there was no one to tell me what to buy, where to buy it nor what to do with it. At last an old friend of mine who had been on a visit to Edinburgh, had purchased an apparatus and some material with a view of taking Daguerreotypes himself, but finding that he could not, was willing to sell it to me though he could not tell me how to use it, beyond showing me an image of the house opposite upon the ground glass of the camera. I believe my friend let me have the apparatus for what it cost him, which was about £15, and it consisted of a quarter plate portrait lens by Slater, mahogany camera, tripod stand, buffing sticks, coating and mercury boxes of the roughest description, a few chemicals and silvered plates, and a rather singular but portable darkroom. Of the uses of the chemicals I knew very little, and of their nature nothing which led to very serious consequences which I shall relate in the proper place. I distinctly remember, even at this distant date, with what nervous curiosity I examined all the articles when I unpacked them in my father's house and with what wonder, not unmixed with apprehension, my father looked upon this display of unknown, and to him apparently nameless and useless toys. 'More like a lot of conjurer's traps than anything else,' he exclaimed after I had set them all out. And a few days after he told one of my young friends that he thought I had gone out of my mind to take up with that "Daggertype" business; the name itself was a stumbling block in those days, for people called the process 'dagtype, docktype and daggertype' more frequently than by its proper name. What a contrast nowadays, when almost every father is an amateur photographer, and encourages both his sons and daughters to become the same.

"My father was a very good parent, in his way, and encouraged me, to the fullest extent of his means, in the study of music and painting, and even sent me to the Government School of Design, where I studied drawing under W. B. Scott; but the new-fangled method of taking portraits did not harmonize with his conservative and practical notions. One source of his disapprobation and dissatisfaction was, doubtless, my many failures; in fact, I may say, inability to show him any result. I had acquired an apparatus of the roughest and most primitive construction, but no knowledge of its use or the behaviour of the chemicals employed, beyond the bare numerical order in which they were to be used, and there was no one within a hundred miles of where I lived, that I knew of, who could give me lessons or the slightest hint respecting the process. I had worn out the patience of all my relations and friends in fruitless sittings. I had set fire to my singular darkroom and nearly set fire to the house, by attempting to refill

> the spirit lamp while alight, and I was ill and suffering from salivation through inhaling the fumes of mercury in my blind, anxious and enthusiastic endeavours to obtain a sun picture. It is not long since an eminent photographer told me that I was an enthusiast, but if he had seen me in those days, he would, in all probability, have told me that I was mad. Though ill, I was not mad; I was only determined not to be beaten. I was resolved to keep pegging away until I obtained a satisfactory result. My friends laughed at me when I asked them to sit for a trial, and they either refused, or sat with a very bad grace as if it really were a trial to them; but fancy, fair and kindly readers, what it must have been to me! Finding that my living models fought shy of me and my trials, I borrowed a large doll—quite as big as a baby—of one of my lady friends. I stuck it up in the garden and pegged away at it for nearly six months. At the end of that time I was able to produce a portrait of the doll with tolerable certainty and success. Then I ventured to ask my friends to sit again, but my process was too slow for live studies, and my live sitters generally moved so much, that their portraits were not recognizable. There were no head-rests in those days, at least I did not possess one, or it might have been pleasanter for my sitters and easier for myself. What surprised me very much—and I thought it a singular thing at the time, was my success in copying an engraving of Thorburn's Miniature of the Queen. I made several good and beautiful copies of that engraving, and sent one to an artist friend, then in Devonshire, who wrote to say that it was beautiful, and that if he could get a Daguerreotype portrait with the eyes as clear as that, he would sit at once, but all the 'dagtypes' he had hitherto seen had only black holes where the eyes should be. Unfortunately, that was my own experience. I could copy from the flat well enough, but when I went to the round, I went wrong. Ultimately I discovered the cause of all that, and found a remedy, but, oh! the weary labour and mental worry I underwent before I mastered the difficulties of the most troublesome and uncertain, yet most beautiful and permanent of all the photographic processes that ever was discovered or invented, and now it is a lost art."

It speaks for the hardiness of the human species *photographer* that in spite of all the difficulties—and we shall see that there were plenty more to come in the course of the next thirty years—the "Daguerreotype" process spread rapidly. The majority of the photographers devoted their art to portraiture. General views and architectural subjects were also taken, but more as experiments or for fun. Photography as a whole was in its infancy financed and kept alive by the masses of people who wanted their pictures taken. Portrait studios grew up in great numbers, large and small, efficient and—more often—inefficient. One of the first, if not *the* first studio in the world, was that of SAMUEL MORSE, famous for his invention of the telegraph. He had been instructed by DAGUERRE himself and in 1840, together with the scientist DR. JOHN WILLIAM DRAPER, opened a portrait studio on the roof of the New York University.

In September 1840, DRAPER published an instructive article on "How to Do It" in the *London and Edinburgh Philosophical Magazine*, from which the following quotations have been taken:



"The Ratcatchers of the Sewers."—Engraving from a book, "London Labour and London Poor," about 1860, purporting to have been made "from a Daguerreotype by Beard". Considering lighting conditions and the action shown the statement is probably incorrect.

> " . . . The chair in which the sitter is placed has a staff at his back, terminating in an iron ring, that supports the head, so arranged as to have motion in directions to suit any stature and any attitude. By simply resting the back or side of the head against this ring, it may be kept sufficiently still to allow the minutest marks on the face to be copied. The hands should never rest upon the chest, for the motion of respiration disturbs them so much as to bring them out of a thick and clumsy appearance, destroying also the representation of the veins on the back which, if they are held motionless, are copied with surprising beauty. . . .
>
> " . . . A person dressed in a black coat and open waistcoat of the same colour must put on a temporary front of a drab or flesh colour, or, by the time that his face and the fine shadows of his woollen clothing are evolved, his shirt will be solarized and be blue, or even black, with a white halo around it. Where, however, the white parts of the dress do not expose much surface, or expose it obliquely, these precautions are not essential; the white collar will scarcely solarize until the face is passing into the same condition. Precautions of the same kind are necessary in ladies' dresses, which should not be of tints contrasting strongly.

It is amusing to read these instructions, so necessary in the days of thirty-minutes' exposures and so completely opposite from what we are teaching to-day. It is clear that photography, at that time, was not only a thrill for the photographer, but also for the one who was photographed. The very fact that the studios were mainly situated on a level with the chimney pots, and were bathed in a strange blue light which streamed through large painted windows (the blue paint at the same time shutting out the outer-world completely) gave every visit to a photographer a suggestion of not quite respectable, but very agreeable intimacy.

CUTHBERT BEDE, in his charming book *Photographic Pleasures* (London, 1855), narrates his first arrival at a photographer's studio.

> " . . . A placard informed us that the "Daguerreotype and Photographic Rooms" were upstairs ☞. So we passed down a dark passage and tumbled on to a still darker staircase, to the great damage to our shins, and the needless outlay of inelegant expressions. With a little difficulty, we got up a flight of steep stairs, kicking against each stair as we went, to keep ourselves in the right track; and at length we found ourselves on a small landing, of a size calculated to hold one uncomfortably. We looked about us, and, by the light that dimly straggled through a half-glass door, we saw before our nose—indeed against it—another ☞ as though pointing out to us an upward path. We silently took it; the way was steep and sterile—for the carpeting had ceased at the first plateau—and we began to feel fatigued. We arrived at another landing, as shrunken in its dimensions as the previous one; and there, on the wall, gleamed the mystic ☞. Gloomy thoughts took possessions of our minds, but the faint sound of "Cheer, boys, cheer!" played on an organ in the street below, encouraged us to proceed. We staggered up another steep and sterile flight, and, by a toilsome route, gained another plateau. Still, the mystic ☞ was there and still it urged us upwards, upwards!
>
> " . . . We go on. Another landing, and another ☞. Is it a demon hand that is going before us and luring us on to destruction? Horrible fancies fill our brain. Another

> landing is gained; and still the demon ☞ is urging us upwards. . . . A few more moments of toil, and our exertions are crowned with success; we sink down exhausted at the door of the Daguerreotype room. No need now for the demon ☞ to point out what we have discovered. Ha! ha! we have discovered that photography is, indeed, High Art."

A great number of caricatures, anecdotes and stories, most of them very amusing to read, appeared in the papers and periodicals of those days, showing the various and sometimes very unexpected reactions of the public to photography. Although people as a whole were very "Daguerreo-minded", they had hardly more than an inkling of the working principles of the technique. One photographer was asked by a distant would-be client whether it was necessary to attend personally to the sitting or whether a description of himself, sent by post, would be sufficient. Another sitter wanted first to be assured that there was no danger of his being poisoned by the various vapours in which he would have to be "enveloped", and an anxious mother asked whether her child could stand the strain of "being exposed to the rays of the camera for such a long time". The greatest difficulty was, of course, to make the sitters realise that it was essential to sit absolutely motionless for many minutes.

JOHN WERGE, in his book, tells of a young lady in Yorkshire who, in 1842, went a considerable distance to sit to an itinerant Daguerreotypist for her portrait.

> "She was placed before the camera, the slide drawn, lens uncapped, and requested to sit there until the Daguerreotypist returned. He went away, probably to put his 'mercury box' in order or to have a smoke, for it was irksome—both to sitter and operator—to sit or stand doing nothing during those necessarily long exposures. When the operator returned, the lady was sitting where he left her, and appeared glad to be relieved from her constrained position. She departed and he proceeded with the development of the picture. The plate was examined from time to time in the usual way, but there was no appearance of the lady. The ground, the wall, and the chair whereon she sat were all visible, but the image of the lady was not; and the operator was completely puzzled, if not alarmed. He left the lady sitting and found her sitting when he returned, so he was quite unable to account for her mysterious non-appearance in the picture. The mystery was, however, explained in a few days, when the lady called for her portrait, for she admitted that she got up and walked about as soon as he left her and only sat down again when she heard him returning. The necessity of remaining before the camera was not recognized by that sitter."

Not all clients were quite as mobile as this young lady, but many photographers found it necessary to post up notices to the effect that "if the sitters move and spoil the photograph, they will be obliged to make another *rendezvous* and pay a second deposit, the first being forfeited."

The peak period of the Daguerreotype was the decade between 1845 and 1855. It was probably the most colourful and most enthusiastic period in the whole history of the camera. In our days photography, as far as the public is concerned, is a mass commodity, in the 'teens it was a popular hobby, in the 'eighties and 'nineties an attempt—mostly unsuccessful—to find a short-cut to "art", in the 'sixties a kind of moral and social obligation, but in the early 'forties it was pure adventure, for photographers and sitters alike, with the whole world looking on as an excited audience.

Between 1850 and 1860 the Collodion process, based on TALBOT's negative-positive technique, made its appearance and this marked the end of the Daguerreotype which could no longer hold its ground against the faster and more adaptable competitor.

The Calotype

Parallel with the Daguerreotype, though far from reaching the same degree of popularity, evolved the "Calotype", TALBOT's technique. It was, as already mentioned, based on the negative-positive principle.

A sheet of ordinary writing paper was used as base for the emulsion which was applied to the paper by coating one surface first with solutions of silver nitrate and iodide of potassium and later, immediately before use, with gallonitrate of silver. The paper was now sensitive to light and could be exposed in the camera obscura. After exposure, the negative was either placed in a dark box where it became visible after some time without further interference, or it could be developed in a solution of gallonitrate of silver. This was followed by fixing, washing and drying. The negative had to be waxed in order to become transparent for the copying process. A paper, similarly coated, was then placed on top of the negative and printed out to full strength. It needed only fixing and drying.

This was the method TALBOT employed at the time when his process was patented. He has described the growth of his invention from its very first beginnings in his *Pencil of Nature* (London, 1844).

> " . . . One of the first days of the month of October 1833, I was amusing myself on the lovely shores of the Lake of Como, in Italy, taking sketches with Wollaston's Camera Lucida, or rather I should say, attempting to take them: but with the smallest possible amount of success. For when the eye was removed from the prism—in which all looked beautiful—I found that the faithless pencil had only left traces on the paper melancholy to behold.

"After various fruitless attempts, I laid aside the instrument, and came to the conclusion, that its use required a previous knowledge of drawing, which unfortunately I did not possess.

"I then thought of trying again a method which I had tried many years before. This method was, to take a Camera Obscura and to throw the image of the object on a piece of transparent tracing paper laid on a pane of glass in the focus of the instrument. On this paper the objects are distinctly seen, and can be traced on it with a pencil with some degree of accuracy, though not without much time and trouble.

"I had tried the simple method during former visits to Italy in 1823 and 1824, but found it in practice somewhat difficult to manage, because the pressure of the hand and pencil upon the paper tends to shake and displace the instrument (insecurely fixed, in all probability, while taking a hasty sketch by a roadside, or out of an inn window); and if the instrument is once deranged, it is most difficult to get it back again, so as to point truly in its former direction.

"Besides which, there is another objection, namely, that it baffles the skill and patience of the amateur to trace all the minute details visible on the paper; so that, in fact, he carries away with him little beyond a mere souvenir of the scene—which, however, certainly has its value when looked back to, in long after years.

"Such, then, was the method which I proposed to try again, and to endeavour, as before, to trace with my pencil the outlines of the scenery depicted on the paper. And this led me to reflect on the inimitable beauty of the pictures of Nature's painting which the glass lens of the Camera throws upon the paper in its focus—fairy pictures, creations of a moment, and destined as rapidly to fade away.

"It was during these thoughts that the idea occurred to me how charming it would be if it were possible to cause these natural images to imprint themselves durably and remain fixed upon the paper?

"And why should it not be possible? I asked myself.

"The picture, divested of the ideas which accompany it, and considered only in its ultimate nature, is but a succession or variety of stronger lights thrown upon one part of the paper, and of deeper shadows on another. Now Light, where it exists, can exert an action, and, in certain circumstances, does exert one sufficient to cause change in material bodies. Suppose, then, such an action could be exerted on the paper: and suppose the paper could be visibly changed by it. In that case, surely some effect must result having a general resemblance to the cause which produced it: so that the variegated scene of light and shade might leave its image or impression behind, stronger or weaker on different parts of the paper according to the strength or weakness of the light which had acted there.

"Such was the idea that came into my mind. Whether it had ever occurred to me before amid floating philosophic visions, I know not, though I rather think it must have done so, because on this occasion it struck me so forcibly. I was then a wanderer in classic Italy, and of course, unable to commence an enquiry of so much difficulty: but, lest the thought should again escape me between that time and my return to England, I made a careful note of it in writing, and also of such experiments as I thought would be most likely to realize it if it were possible.

"And since, according to chemical writers, the nitrate of silver is a substance peculiarly sensitive to the action of light, I resolved to make a trial of it in the first instance, whenever occasion permitted on my return to England.

But although I knew the fact from chemical books, that nitrate of silver was changed or decomposed by Light, still I had never seen the experiment tried, and therefore I had no idea whether the action was a rapid or a slow one; a point, however, of the utmost importance, since, if it were a slow one, my theory might prove but a philosophic dream.

"Such were, as nearly as I can now remember, the reflections which led me to the invention of this theory, and which first impelled me to explore a path so deeply hidden among Nature's secrets. And the numerous researches which were afterwards made—whatever success may be thought to have attended them—cannot, I think, admit of a comparison with the value of the first and original idea.

"In January 1834, I returned to England from my continental tour and soon afterwards I determined to put my theories and speculations to the test of experiments and see whether they had any real foundations."

Talbot now describes a number of experiments with nitrate of silver and chloride of silver by which he found that the amount of common salt, used for the preparation of chloride, had a great influence on the degree of sensitiveness. He arrived at the conclusion that "what was required was, to have a deficiency of salt, in order to produce an imperfect chloride, or (perhaps it should be called) a *subchloride* of silver. . . ."

"This process of the formation of a subchloride by the use of a very weak solution of salt having been discovered in the spring of 1834, no difficulty was found in obtaining distinct and very pleasing images of such things as leaves, lace, and other flat objects of complicated forms and outlines, by exposing them to the light of the sun.

"The paper being well dried, the leaves, etc., were spread upon it and covered with a glass pressed down tightly, and then placed in the sunshine; and when the paper grew dark, the whole was carried into the shade, and the objects being removed from off the paper, were found to have left their images very perfectly and beautifully impressed or delineated upon it.

"But when the sensitive paper was placed in the focus of a Camera Obscura and directed to any object, a building for instance, during a moderate space of time, as an hour or two, the effect produced upon the paper was not strong enough to exhibit such a satisfactory picture of the building as had been hoped for. The outline of the roof and the chimneys, etc., against the sky was marked enough; but the details of the architecture were feeble, and the parts in shade were left either blank or nearly so. The sensitiveness of the paper to light, considerable as it seemed in some respects, was therefore, as yet, evidently insufficient for the purpose of obtaining pictures with the Camera Obscura; and the course of experiments had to be again renewed in hopes of attaining to some more important result."

Talbot continued his experiments in the autumn of 1834, during a stay in Geneva. This time he employed iodide of silver which, however, turned out to be even slower than chloride of silver, yet proved to be a satisfactory fixing agent. In 1835, back in England, Talbot made new attempts with the camera obscura. He writes:

" . . . Having devised a process which gave additional sensibility to the paper, viz., by giving it repeated alternate washes of salt and silver, and using it in a moist state, I succeeded in reducing the time necessary for obtaining an image with the Camera Obscura on a bright day to ten minutes. But these pictures, though very pretty, were very small (about 3 square inches.—Editor), being quite miniatures. Some

> were obtained of a larger size, but they required much patience, nor did they seem so perfect as the smaller ones, for it was difficult to keep the instrument steady for a great length of time, pointing at the same object and the paper being used moist was often acted on irregularly.
>
> "During the three following years not much was added to previous knowledge. Want of sufficient leisure for experiments was a great obstacle and hindrance and I almost resolved to publish some account of the art in the imperfect state in which it then was."

At the end of the year 1838, TALBOT discovered a new fact: a reaction of iodine on silver which looked promising, and which he followed up at once. It was during this new sequence of experiments that the "bombshell of DAGUERRE's discovery burst upon the unsuspecting scientist."

> "Such was the progress which I had made . . . at the close of the year 1838, when an event occurred in the scientific world which in some degree frustrated the hope with which I had pursued, during nearly five years, this long and complicated, but interesting series of experiments—the hope, namely, of being the first to announce to the world the existence of the New Art—which has been since named Photography.
>
> "I allude, of course, to the publication in the month of January 1839, of the great discovery of M. Daguerre, of the photographic process which he has called the Daguerreotype . . ."

TALBOT's disappointment can be readily understood. He tried to establish priority of his discovery as soon as he got wind of DAGUERRE's achievement by making a statement to the Royal Academy. This was some months before DAGUERRE's invention was officially announced. A second statement in which TALBOT described a number of improvements on his process was made some time later, but all this did not seem to interest the public, apart from a small number of scientists and photographers. One of the reasons for this general indifference towards TALBOT's invention was that the texture of the negative paper was necessarily shown in the print, giving the photograph a somewhat soft, if not to say blurred, appearance. Although this feature made the "Talbotype" a marvellous medium in the hands of a pictorial artist like D. O. HILL, it was not at all appreciated by the mass of the photographers' clients who were prejudiced in favour of the minute sharpness of the "Daguerreotype".

TALBOT patented his process in 1841 and issued licences to a number of professional photographers, mainly in England and America. The actual routine of taking a "Calotype" photograph and the problems involved for the photographer resembled very much those of his Daguerreotype colleague.

Cuthbert Bede's book *Photographic Pleasures* contains a very amusing description of a visit to a "Calotype" studio:

> " . . . The operator was a Swede, light-haired, red moustachioed, and with a fez. I sat at my ease on a couch, backed by a screen of black velvet. The good-natured operator, in the best English he could muster, explained to me the nature of the process (even taking me into his dark den of magic), and remarked with great truth, 'When beebles do come for vaat you call bortraits, dey most not dink dey are in de leetle rum by demself, bot dey most dink dat all de world look at dem! dat dey are having deir bortraits bainted before a crowd, oh! so vast! dat dey are on the stage of de theatre wid den dousand beebles all a looking at dem, and not shot up here in de leetle rum, by demself. Now, sare! gompose your features for de bortrait: and when I say "Now!" de operation will gommence.'
>
> "I did as I was directed and looked as composed and grave as if I were facing an Exeter Hall audience in the merry month of May. But when the Swede lowered his fez and red moustache and crouched down behind the camera, and suddenly lifting up and shutting down the slide, exclaimed, 'Den dousand beebles look at you!' it was altogether too much for my risible faculties. The ridiculousness of the situation came over me and I burst into such a sudden and hearty fit of laughter that my 'Calotype' head was quite blown off and the Swede had all his trouble over again."

The "Calotype" had introduced itself slowly. Nevertheless, as time passed on, it gained recognition and expanded. The restrictions which Talbot had imposed on its general use were keenly felt. In 1852, the President of the Royal Academy requested Talbot therefore to relinquish his patent rights. His letter and Talbot's answer were published in *The Times* of the 13th August, 1852.

From the President of the Royal Academy to Talbot:

> "London, July 1852.
>
> "Dear Sir,
>
> "In addressing to you this letter we believe that we speak the sentiments of many persons eminent for their love of science and art.
>
> "The art of photography upon paper of which you are the inventor, has arrived at such a degree of perfection that it must soon become of national importance; and we are anxious that, as the art itself originated in England, it should also receive its further perfection and development in this country. At present, however, although England continues to take the lead in some branches of the art, yet in others the French are unquestionably making more rapid progress than we are.
>
> "It is very desirable that we should not be left behind by the nations of the Continent in the improvement and development of a purely British invention; and as you are the possessor of a patent right in this invention which will continue for some years and which may, perhaps, be renewed, we beg to call your attention to the subject, and to enquire whether it may not be possible for you by making some alterations in the exercise of your patent rights to obviate most of the difficulties which now appear to hinder the progress of the art in England. Many of the finest applications of the invention will, probably, require the co-operation of men of science and skilful artists. But it is evident that the more freely they can use resources of the art, the more probable it is that their efforts will be attended with eminent success.

"As we feel no doubt that some such judicious alteration would give great satisfaction and be the means of rapidly improving this beautiful art we beg to make this friendly communication to you in the full confidence that you will receive it in the same spirit—the improvement of art and science being our common object.

ROSSE.
C. L. EASTLAKE.

From TALBOT to LORD ROSSE:

"Lacock Abbey, July 30th.

"MY DEAR LORD ROSSE,

"I have had the honour of receiving a letter from yourself and Sir C. Eastlake respecting my photographic invention to which I have now the pleasure of replying.

"Ever since the Great Exhibition, I felt that a new era has commenced for photography, as it has for so many other useful arts and inventions. Thousands of persons have now become acquainted with the art, and from having seen such beautiful specimens of it produced both in England and France, have naturally felt a wish to practise it themselves. A variety of new applications of it have been imagined and doubtless many more remain to be discovered.

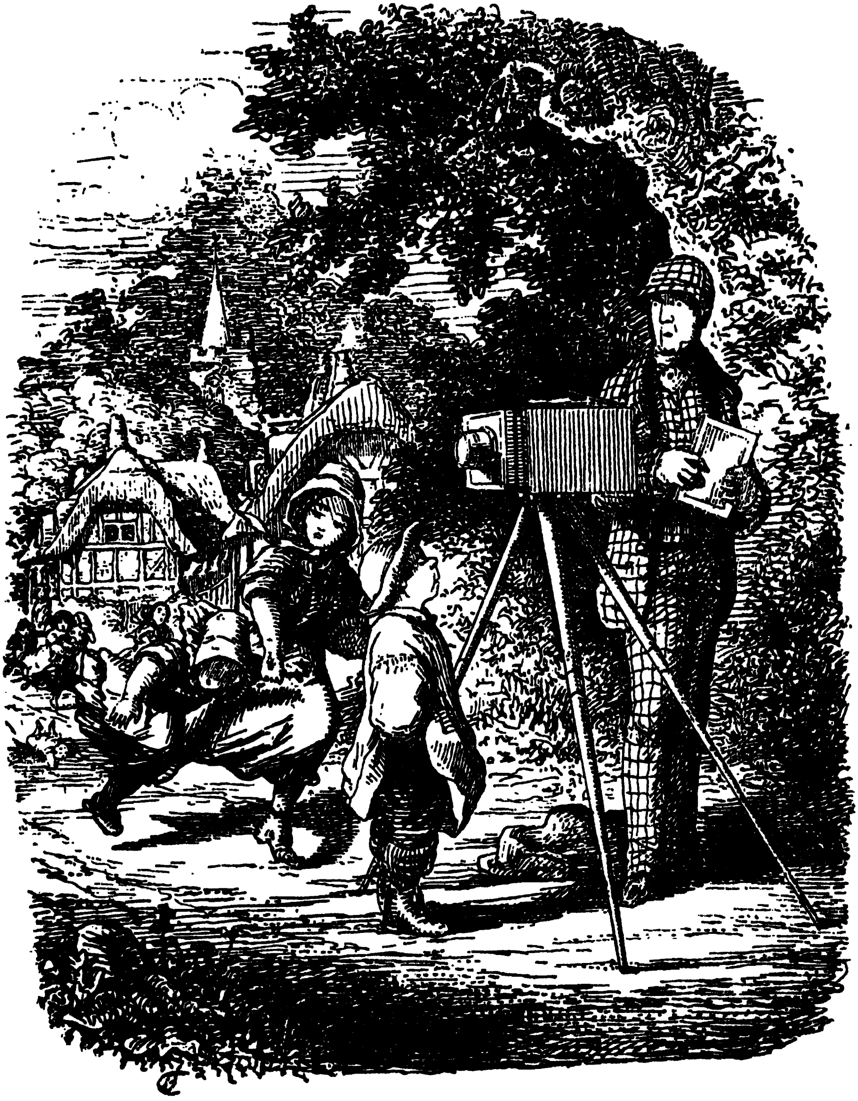
"I am unable myself to pursue all these numerous branches of the invention in a manner that can even attempt to do justice to them and moreover, I believe it to be no longer necessary, for the art has now taken a firm root both in England and France, and may safely be left to take its natural development. I am as desirous as anyone of the lovers of science and art whose wishes you have kindly undertaken to represent, that our country should continue to take the lead in this newly-discovered branch of the fine arts; and after much consideration, I think that the best thing I can do, and the most likely to stimulate further improvements in photography, will be to invite the emulation and competition of our artists and amateurs, by relaxing the patent right which I possess in this invention. I therefore beg to reply to your kind letter by offering the patent (with the exception of the single point hereafter mentioned), as a free present to the public, together with my other patents for improvements in the same art, one of which has very recently been granted to me, and has still thirteen years unexpired. The exception to which I refer and which I am desirous of still keeping in the hands of my own licencees, is the application of the invention to taking photographic portraits for sale to the public. This is a branch of the art which must necessarily be in comparatively few hands, because it requires a house to be built or altered on purpose having an apartment lighted by a skylight, etc., otherwise the portraits cannot be taken indoors, generally speaking, without great difficulty.

"With this exception, then, I present my invention to the country and trust that it may realize our hopes of its future utility.

"Believe me to remain, my dear Lord Rosse,

"Your obliged and faithful servant,
"H. F. TALBOT."

Some time after this correspondence took place the "Calotype" was no longer used in its original form, the Americans especially making many alterations and improvements. The course of the "Calotype" was as quiet and unobtrusive as that of the "Daguerreotype" was dazzling. But two facts must not be forgotten: that photography of to-day originated from TALBOT's crude but charming technique, and that this technique



A PHOTOGRAPHER ASTONISHING THE NATIVES.

"COME ALONG, BETSY JANE, DO! AND LOOK AT THE MAN WITH THE PEEP-SHOW!"

Caricature, by Cuthbert Bede, 1855.

has given us the finest collection of photographs, taken in the early period of photography: the work of DAVID OCTAVIUS HILL.

The Collodion Process

DAGUERRE and TALBOT have opened the way to photography, yet serious faults, as we have seen, were attached to both their techniques. The "Daguerreotypes" could only be copied by re-photographing them: a grave fundamental shortcoming. The "Calotype", on the other hand, lacked sharpness: the texture of the paper negative was inevitably part of every print, a fact which rendered the technique unsuitable for all but pictorial purposes.

In order to overcome this defect it was natural to think of glass as a support for the chemicals. Glass appeared to be an ideal medium, grainless and durable, but the trouble was that the emulsions known at that time would not adhere to it.

In 1846, gun-cotton was discovered and a few years later, in 1851, FREDERIC SCOTT ARCHER found that a certain kind of this substance, if dissolved in ether—the resulting solution being called collodion—was not only suitable for carrying the sensitive chemicals, but also that glass could be coated with it evenly and permanently. New avenues were opened by this discovery. After further experiments SCOTT ARCHER was able to publish an account of his method and a formula for coating glass plates.

The following directions are taken from his *Manual of the Collodion Photographic Process*, 1852:

1. Immerse eighty grains of cotton wool in a mixture of one ounce each of nitrate and sulphuric acid; take out after fifteen seconds and wash thoroughly in running water.
2. Dissolve the pyroxylin (gun-cotton.—Editor) so obtained in a mixture of equal parts of sulphuric ether and absolute alcohol. The solution so obtained is ordinary collodion.
3. Add some soluble iodide—usually iodide of potassium—to the collodion. A little potassium bromide may also be added.
4. Pour the iodized collodion on a perfectly clean glass plate and allow two to three minutes for the film to set.
5. Take the coated plate into the dark room and immerse it in a bath of silver nitrate (thirty grains to every ounce of water) for about a minute. Here a chemical change takes place by which silver iodide is formed in the pores of the collodion.
6. Remove the plate which is now sensitive to white light, place it in a slide holder, and expose it in the camera. The time of exposure may vary from one moment to a quarter of an hour.
7. Take the plate back to the dark room and develop it by pouring on it a mixture of water, one ounce; acetic acid, one dram; pyrogallic acid, three grains.
8. Fix the image by soaking the plate in a strong solution of hypo-sulphite of soda.

The negatives obtained by this method were of a very high quality, even if measured by the standards of to-day. They were pin-sharp and could be produced in any desired density and brilliance. SCOTT ARCHER himself took a great number of photographs, mainly of architectural subjects, but, being a scientist rather than an artist, his pictures were straightforward reproductions of Nature and interesting from a technical point of view only.

The main characteristic of this technique was that the plates had to be used while they were still wet (the popular term for this technique presently became therefore "Wet Plate Process"). As soon as the plates dried their sensitiveness diminished in such a degree that they became useless for any practical purpose. This fact was the notorious bugbear of the Collodion process and an unending flow of melancholy reflections on this point can be found in the literature of that time.

The following short extract from a contemporary source, quoted in *Immortal Portraits* (Focal Press, London, 1942) will give a good idea of the difficulties which the Collodion photographer had to overcome:

> "When you realize that the most sensitive of all the list of chemicals are requisite to make Collodion, and that the very slightest breath may carry enough 'poison' across the plate being coated to make it produce a blank instead of some much desired effect, you may have perhaps some faint idea of the care requisite to produce a photograph. . . . Often, just as some fine result looked certain, a hot streak of air would not only spoil the plate but put the instrument out of commission by curling some part of it out of shape. Rain, high winds, heat and frost, all militate against success. A speck of dust will ruin the plate. Only distilled water can be used in the solutions."

In spite of all these troubles, photography extended its scope considerably during the Collodion period. Portraiture was now only one line amongst many, field photography came more and more to the fore. A great variety of portable outfits, containing the necessary dark-tent, became available, which could be carried by a strong man on a wooden frame placed on his shoulders. There were also specially designed wheelbarrows and carts, and even more elaborate travelling laboratories drawn by horses.

ROGER FENTON who, in 1855, went to the Crimea in order to obtain photographic records of the war, described the outfit which he took with him in a paper read to the Royal Photographic Society after his return:

> " . . . I took with me a camera for portraits fitted with one of Ross's 3-inch lenses, two cameras made by Bourquien of Paris, of the bellows construction, and fitted with

Ross's 4-inch landscape lenses, and two smaller cameras made by Horne, and fitted with their lenses, but in place of which I subsequently employed a pair of Ross's 3-inch lenses with which I had previously worked.

The stock of glass plates was, I think, 700, of three different sizes, fitted into grooved boxes, each of which contained about twenty-four plates; the boxes of glass were again packed in chests, so as to insure their security.

"Several chests of chemicals, a small still with stove, three or four printing frames, gutta-percha baths and dishes, and a few carpenters' tools, formed the principal part of the photographic baggage.

"I must not forget, however, what was to be the foundation of all my labours, the travelling darkroom. The carriage which has already had an existence chequered with many adventures by field and flood, began its career, so far as its present historian knows, in the service of a wine merchant in Canterbury.

"When it entered into the service of art, a fresh top was made for it, so as to convert it into a darkroom; panes of yellow glass, with shutters, were fixed in the sides; a bed was constructed for it, which folded up into a very small space, under the bench of the upper end. Round the top were cisterns for distilled and for ordinary water, and a shelf for books. On the sides were places for fixing the gutta-percha baths, glass-dippers, knives, forks and spoons. The kettle and cups hung from the roof. On the floor, under the trough for receiving waste water, was a frame with holes, in which were fitted the heavier bottles. This frame had at night to be lifted up, and placed on the working bench with the cameras, to make room for the bed the furniture of which was, during the day, contained in the box under the driving seat.

"In addition to the purely photographic preparations were several boxes of preserved meats, wine and biscuits, harness for three horses, a tent, one of Price's candle stoves, a few tools, and a great many other smaller matters likely to be useful, the whole being packed up in thirty-six large chests, which took up so much space on Blackwall Pier, as to make me think with rueful forebodings of the sort of resting place they were likely to find on the shore of Balaclava."

Although the van just described constituted probably the last word in efficiency and luxury at that time, working in it was far from comfortable, as FENTON told his audience in another part of his lecture.

"It was difficult, in the great heats, to clean the glass plates properly; perhaps I should rather say, that when the heat was intense, impurities upon the glass which in a lower temperature would have been of no detriment, became centres of chemical action and caused spots or streaks in the negative picture.

"It was necessary in the hot weather to thin the Collodion to a much greater extent than is usual in England; and even with this precaution it was hard to spread a film of Collodion evenly over a large plate, the upper part of the film drying before the excess of liquid had run off at the lower corner of the plate. From the same cause the development of the pictures was more difficult, as a film often became nearly dry in the short time necessary to take the slide containing it to the camera and back again, and then, of course, the developing fluid would not, when poured on to the plate, run at once all over it without stoppage. Some idea of the heat may be formed from the fact, that the door of the van being left open, one day in the beginning of June, and the sun shining into it, a gutta-percha funnel, which was exposed to its rays, became blistered all over as if it had been laid upon the heated bars of a fireplace.

"I need not speak of the physical exhaustion which I experienced in working in my van in this period. Though it was painted of a light colour externally, it grew so hot towards noon as to burn the hand when touched. As soon as the door was closed to commence the preparation of a plate, perspiration started from every pore; and the sense of relief was great when it was possible to open the door and breathe even the hot air outside.

"I should not forget to state that it was at this time that the plague of flies commenced. Before preparing a plate, the first thing to be done was to battle with them for the possession of the place; the necessary buffeting with handkerchiefs and towels having taken place and the intruders being expelled, the moment the last one was out, the door had to be rapidly closed for fear of a fresh invasion and then some time to be allowed for the dust thus raised to settle before coating a plate."

At home in England, the difficulties of photographing in the field were slighter in extent, but not in kind. Camera work in the 'sixties required not so much the sensitivity of an artist than the constitution of an ox. Perhaps this is the reason that there was not much artfulness about outdoor-photography in those days. Its simplicity contrasted sharply with the richness of imagination in the pictorial field, such as displayed, for instance, in MRS. CAMERON's work.

The editor of the *American Photographic Almanac* (New York, 1865), JOHN TOWLER, found it necessary to caution his readers in an open letter which was obviously prompted by numerous requests for tuition in photography. This is what he wrote:

"MY DEAR SIR,

"If you can shave and wash yourself before breakfast, and neither smoke nor chew; if you can make a charcoal fire and sweep out the laboratory before six o'clock in the morning, if you do not hesitate to carry a pail of water through the streets, or drag a photographic hand-cart up a precipitous declivity, if you can run with a wet plate for half a mile in five minutes, through brakes and brambles, without shuddering at the idea of rattle-snakes or black serpents; if you do not scruple to ascend or descend crags overhanging deathlike abysses without the slightest conception of your soul being severed from your body; if you can feed on crackers, cheese and spring water for a whole day without any craving for city delicacies; if you can bear to see a whole day's labour shattered to atoms in the cars, without swearing, in fine, if you are determined to make photography your hobby I will condescend to allow you to enter my sanctum, and to partake of my instruction."

And here are a few tips published by MR. BLANCHARD in *The Year Book of Photography and Photographic News Almanac for* 1865 (London) for the enlightenment of those photographers who were mad enough to insist on taking a camera out into the open air.

"Never clean a glass out of doors and therefore take a sufficient stock ready cleaned with you.

"In cleaning a glass remember it has two sides, for you can ill spare the silver from the bath which is reduced upon the neglected side.

> "Carry a small dusting brush in your waistcoat pocket and don't lend it for love, and certainly not for money.
>
> "Carry your stock of Collodion in several small bottles rather than in one large one, for it is decidedly awkward to break your only bottle of Collodion when working twenty miles from a chemist's shop.
>
> "Don't commence packing up until all the articles needful for the journey are collected together . . . go mentally through the operations involved in taking a picture. Thus: begin with the plates, then put aside the Collodion necessary for the trip, then the bath and dipper, afterwards developer, intensifier, etc., and so on to the end.
>
> "Before starting, weigh out several ounces of Sulphate of Iron and make them into packets, the bother of scales and weights will thus be removed.
>
> "Don't be downhearted at the sight of a cloudy morning, it is frequently a sign of a fine day; and, on the other hand, rarely trust a cloudless sky at nine in the morning. The chances are ten to one that it will be dull by two o'clock.
>
> "A calm day is of course best for foliage if the exposure be long, but remember at such times Nature frequently puts on her most insipid look, therefore be not afraid to sacrifice something of the excessive sharpness in order to obtain a lasting trace of her more varied aspects.
>
> "Before you pitch your tent choose your ground well, and whenever possible protect yourself from sun and wind and keep as far from a dusty road as possible.
>
> "No matter how affectionately dust may cling to the side of your plate, you must separate them with all the determination of a Poor Law officer. It is astounding how dust will cling for support; but don't believe in it, for it won't do.
>
> "Never fix your pictures in the tent, but wash them well. You need not then be afraid of daylight, for its influence is rather beneficial than otherwise.
>
> "If you are at all short of water, do not fix your negatives until you get home; for should they partly dry, you will have a stain where the action is stopped, if the fixing operation is imperfectly performed.
>
> "Remember, an artistic picture costs but little more trouble than a worthless one; therefore, use well your eyes before you begin work, for though the camera is a most obedient instrument, *you* must first *see* the picture, for you cannot expect the lens to see it for you.
>
> "Unless you have an inexhaustible stock of patience, stop at home."

Patience was indeed the first requisite for an outdoor photographer and it is understandable that a short experience in the field was sufficient for many beginners to make them "stop at home" for ever. The exigencies of the Collodion process were not exactly favourable for the creation of a photographic mass movement.

This period was perhaps the most sterile with regard to amateur photography and the reasons summed up by W. JEROME HARRISON in *A History of Photography* (London, 1888) will be readily appreciated.

> "Up to about 1853 a photograph was considered a curiosity; but the introduction and perfection of the Collodion process made photography, for the first time, a really popular pursuit. With mistaken ideas as to the ease of the new method, large numbers of amateurs purchased the necessary materials; and about 1858 the camera became as common an object as the barrel organ!
>
> "But with the practice of photography came the sad knowledge that there is no

royal road to the taking of good pictures. Although money might be lavishly spent in the purchase of costly apparatus, yet it was soon found that some knowledge of chemistry and some artistic taste, together with practice in manipulation, and neatness and accuracy in working, were indispensable to success. Moreover, the chemicals employed—more especially the silver nitrate—had ways of marking the apprentice to photography; stains of inky darkness upon the hands and clothes soon earned for the infant science the appellation of the 'black art'.

"Thus the popularity of photography—as an amusement for amateurs—declined almost as rapidly as it had risen. . . .

" . . . Of the annoyance and damage caused by the black stains of nitrate of silver we have already spoken; but the odour of the Collodion, due to the evaporation of the ether and alcohol which it contained, was also very disagreeable, especially in the small and hot rooms in which photographic operations were commonly carried on. Then, in the preparation of the glass plates, before they were coated, great care had to be exercised to get a smooth and chemically clean surface; the least scratch, or speck of dust showed as a defect in the finished picture. The making of Collodion was so troublesome a process that it was usually purchased ready-made. (This was only possible in later years.—Editor.) The bath of silver nitrate was another source of endless trouble; accounts of its vagaries fill a large portion of the photographic periodicals of the time; it needed continual care, attention and renewal. Lastly, the necessity of keeping the surface of the sensitive plate wet during the whole time of exposure introduced a serious difficulty when it was desired to carry the plates even a small distance; or when, as in the case of photographic interiors, the necessary exposure extended over a period of several hours."

Many would-be photographers, in those days, never got beyond the first stages. But those who had the energy to carry on rendered great service to photography, as they conquered more and more of hitherto undiscovered territory. Animals, for instance, began to attract the attention of the photographers and as it was out of question to place the four-footed models against head rests and similar contraptions, new problems had to be faced and solved.

Mr. Haes, in an address to the Royal Photographic Society in 1865, gave an exhaustive description of his photographic experiences in the Zoo. The following brief extracts give a good idea of his difficulties:

" . . . Upon taking the camera to the Sable Antelope, I saw I should have plenty of trouble; for as soon as he caught sight of the camera, he leapt up and butted at the rail furiously; the keeper said he would injure himself by his passion. So to accustom him to the instrument, I left it in front of his yard during several hours for two days. Even then he would stand looking at it which position did not, of course, give a good view of the animal, and we fruitlessly tried many ways to induce him to present himself sideways to the lens. Fortunately the keeper noticed, that he was attracted by a light-blue coat which I wore; and this was forthwith transferred to the back of a lad I had with me, and whilst the antelope watched him standing as I placed him, I succeeded, after a week of attempts, in securing the required position.

" . . . Next comes the Fretful Porcupine: these being nocturnal animals, are not always seen by visitors; the means adopted to induce them to favour us with a sitting, were these: the keeper, armed with a stiff broom, entered their house and drove them out; and whenever the fine specimen of the crested porcupine tried to go in, the broom was pushed in his face; to this treatment he decidedly objected and thus got all his quills erected, and, while standing perplexed for a second, he gave me a chance which succeeded. I incautiously left one of the legs of my camera-stand in reach of the teeth of one of the smaller porcupines; and if the keeper had not removed it at once, it would, though very stout, have been very quickly destroyed.

" . . . Of the behaviours of the Eland, about which (as making a very acceptable addition, if acclimatized, to our dinner-table) so much has been said, I cannot report favourably; and indeed, if they were not more amiable than the specimen belonging to the Society, which I photographed, I should not care to meet a drove in our streets. Some good-natured individual who was watching and talking to me, while I was intent upon getting this animal into a favourable position, would persist in finishing every sentence by saying, 'Well, I'm sure, you'll never do it', till at last I requested him to leave me, thinking one brute enough to manage at a time . . ."

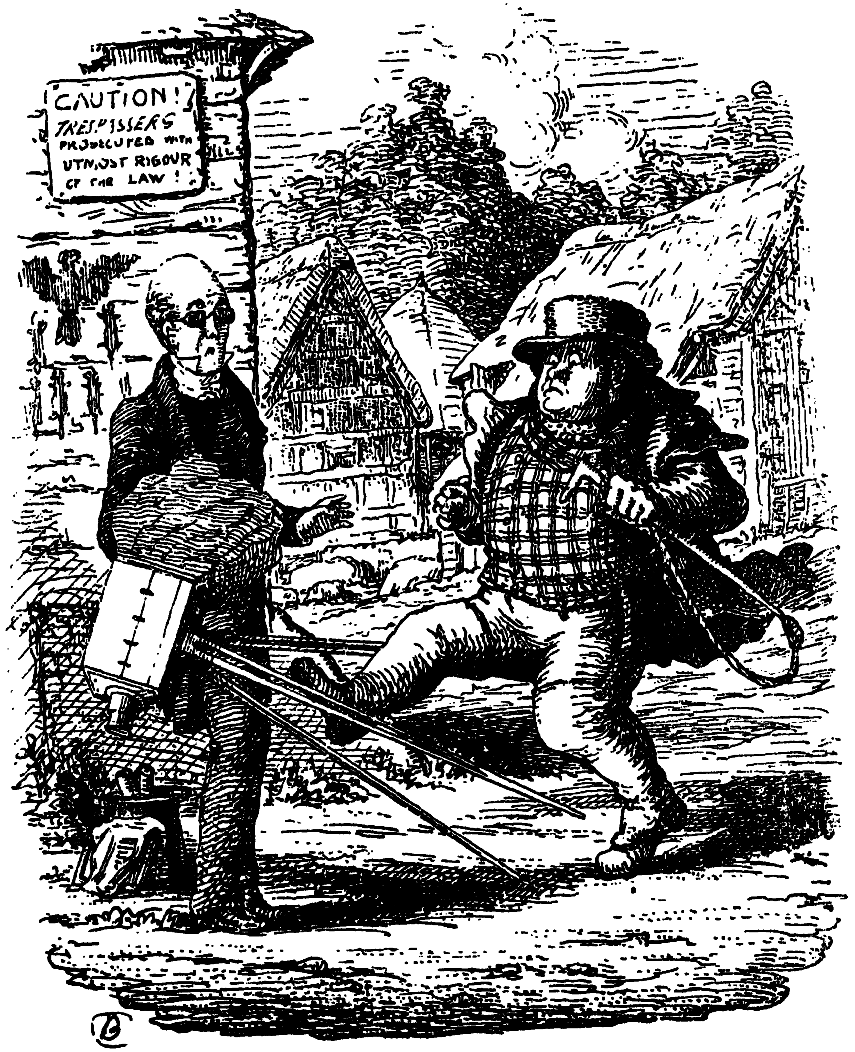
Photography in the Zoo was a trying enough experience and we can readily imagine the much greater difficulties encountered in photographing animals which live in their natural surroundings.

VERNON HEATH, one of the veterans of the Collodion period, has given an interesting account of his first experiments with wild animals in his book *Recollections* (London, 1892).

"One of the attractions of Stoke Park was its splendid red deer. Speaking of these, Mr. Coleman once said: 'I wish you would photograph them; look at that lovely group under the trees, and just think what reputation it would bring you if you succeeded. Now, do try, I am sure it could be done.'

"I smiled, I pictured myself with my camera and its big black cloth on it, attempting to approach animals, proverbially so shy. Nevertheless, I determined to make an effort, to carry our Mr. Coleman's desire, hopeless as I believed it would be. So, on a lovely summer's day I went to Stoke and started with Mr. Coleman to find the deer. In a quiet shady glade we espied them, and then I alone cautiously approached, but, as expected, when I was by far at too great a distance, they took alarm and off they sped. Well, we marked them down and made another attempt, but this time they did not allow me to come as near them as I did at first. And this went on until both Mr. Coleman and I were hot and tired, and at last I abandoned all hope of getting the deer to allow themselves to be the subject of my camera.

"Not so Mr. Coleman. Though he kept his purpose and intention to himself, he quietly and perseveringly, for nearly twelve months, worked out his scheme—a scheme the result of which, when perfect, he invited me to witness. And I shall never forget what I saw. It was so startlingly surprising. Standing on the garden terrace, overlooking the park, I heard a peculiar call, made by a man some two or three hundred yards away. Beyond him was the clear bright lake, and beyond that, on the high ground were arranged the herd of red deer. In reply to the man's call, at high speed, the whole of the herd reached the far bank of the lake, darted into it, swam across, and then cantered towards the man, who, turning round as they neared him, walked slowly towards the terrace where I stood, the deer following him. I then noticed that on his shoulder the man carried a bag which evidently contained something the deer were in expectation of having. Nearer and nearer man and deer came, until at last they were



A SIMPLE MODE OF "LEVELLING" A CAMERA.

Caricature, by Cuthbert Bede, 1855.

close to the terrace, the entire herd being within fifteen or twenty yards of me, some even nearer. The man sat down under the terrace and from time to time repeated the call that first attracted the deer, and there they stood, grouped around him in a manner that would have ravished Landseer to have witnessed.

"This was the scheme Mr. Coleman devised on the day of my failure: he had, in the first place, employed the man I had mentioned to scatter some Indian corn near where the deer were, until, having become accustomed to his bag and call they followed him about.

"I was so struck with all I had witnessed that I could not rest, and the next day, therefore, went with my camera to Stoke, and from the terrace obtained several groups of the deer which, in their way, are unequalled and can never be done again, except under circumstances equally favourable."

VERNON HEATH's book should be a source of great enjoyment to anyone interested in the photographic problems of those days. Once, in 1867, he was asked to photograph a big garden party. After his experiences with the animals he proved to be equal even to this supreme test!

"For some years previous to 1867, I had known Lady Burdett Coutts—at that time Miss Coutts—and was frequently at Holly Lodge. In the summer of the year named she had issued cards for a garden party, and had consulted me as to taking photographs on the occasion. I had, though, but little faith in being able to do anything that would be deemed satisfactory, for a considerable experience had taught me that guests do not, on the whole, behave perfectly. Everyone covets the best position, everyone seeks to be in front, and being there, looks straight into the camera.

"On this account, we had almost abandoned the idea of the photographs, when one day I discovered that one of the windows of Holly Lodge on the ground floor, facing the lawn, was nearly wholly screened by pendant ivy. I at once conceived the plan of placing my camera behind that ivy screen, where by a little care it would not be seen from the lawn.

"I told my plan to Miss Coutts and obtained her consent to have cards engraved similar in size to her own invitation cards and worded, as nearly as I can remember, thus:

" 'Mr. Vernon Heath has been requested by Miss Coutts to take two photographs at her garden party, one at 5.30, the other at 6 o'clock. Three minutes before the times mentioned a bugle will be sounded as a warning, and in each case will be sounded again at the expiration of three minutes when everyone present is asked to remain motionless and steady. A third bugle call will signify that the photograph has been taken.' (Each guest on arrival received one of these cards.)

"My scheme succeeded admirably, Miss Coutts and her immediate friends being alone aware of the position of the camera. Mr. Godfrey placed at my command a bugler and it was but too interesting and amusing to see from my coign of vantage the excitement the first bugle call occasioned all over the lawn. People rushed about looking in every direction for the camera, but failed to discover it. At the second bugle call there was nothing for it but to stand still, the consequence being that I obtained two negatives which were artistic and satisfactory, because the bulk of those who were photographed had stood in natural attitudes."

At some other time VERNON HEATH was commissioned by the authorities to take photographs in Trafalgar Square. If we read his account of this "undertaking" and then remember the batteries of cameras which are being fired at almost every hour of our present days by sightseers visiting this centre of London, the progress—or to be more correct, the technical perfection—of photography since VERNON HEATH's days becomes strikingly manifest.

> "Immediately after Landseer's nobly conceived animals were placed upon their pedestals at the foot of the Nelson Column a rather acrimonious discussion was commenced in the press. I remember my friend, Mr. Tom Taylor, was prominent amongst those who approved, but adverse critics were powerful and numerous.
>
> "It was at the time when this dispute was at its height, that I was required to call upon the Chief Commissioner of Woods and Forests who gave me instructions to take a series of large negatives of the lions.
>
> "Knowing the difficulty I should have to encounter, for my two-camera plan (*The second camera was used to distract the attention of the public.—The Editor.*) would fail when I had to deal with hundreds of people. I asked the commissioner to give me a letter to the officials of Scotland Yard.
>
> "There I saw a superintendent who, at public ceremonies, had been of great service to me; he undertaking that if I gave him an hour's notice fifty constables would be told off to protect me. I had to wait for a favourable morning, for it was in the month of February. On the first opportunity I sent to Scotland Yard, and on my arrival at Trafalgar Square found the ground excellently kept by the police I had been promised.
>
> "My photographic tent was put outside the line where the public stood, and was protected by constables. I was quickly at work for I had undertaken with the superintendent not to keep the men longer than was necessary.
>
> "I took, in all, eight negatives; two of each lion, from different points. . . . During the time of my work a curious incident happened. I was leaving my tent with a plate, which had just been prepared, when an old apple woman, with her basket on her arm, stopped me just outside the line of people, and, showing me a sovereign, said it should be mine if I would let her go inside and stand against the pedestal of the column.
>
> "What her motive was I could not divine: from her manner and dress one would have imagined a sovereign an important coin for her to possess. At all events, when I refused, she looked greatly disappointed."

In view of all the many difficulties the outdoor operators of the Collodion period may justly be described as the shock troops of modern photography.

Yet, in the studios the advance of photography was not less remarkable, although it took place in a more subtle manner. So far, not much thought had been given in portraiture to the problems of lighting. D. O. HILL, in the 'forties, was perhaps the only photographer who used the light in a distinctive way for producing the pictorial effects typical of his art, but then, he was a painter and, as regards photography, almost a genius. Now, in the 'sixties, some change took place. Camera artists like JULIA MARGARET CAMERON or, in France, NADAR, were perhaps too outspoken in their conceptions to be appreciated by the majority of photographers, yet their work could not but influence the general trend of photography.

Light came to be regarded not only as a mere physical necessity for producing a negative, but also as a medium for making a picture: discussions took place, papers were read, articles written, the subject of which was *Lighting*.

JABEZ HUGHES, in 1865, gave a lecture to the South London Photographic Society: "About Light and about Lighting the Sitter", which is interesting for us to read as it outlines already the principles of all modern lighting rules.

"Light is verily the alpha and the omega of the photographer, yet it has received less special study than any of the agencies he employs. Hitherto our energies have been directed to the understanding and perfecting of our processes—in securing good tools and proper materials; but having attained considerable success in these directions, it should now be our purpose to study how best to use the power we have obtained. We have conquered mechanics, controlled chemistry, subsidized optics, and now we should attack Old Sol himself, and seize him by the beams, as a lion by his beard and so assume the mastery. Light is very much as a proverb says of Fire—a good servant, but a bad master. One must not let it have its own way; it must be governed, ruled, controlled, held in check. The Sun is far too liberal with his power; he darts his rays just as freely in the wrong as in the right direction, and is as ready to spoil as to make a picture. It is for the photographer to use and not abuse this prodigality. And this leads to the question of questions: How to use the light.

"The subject is too great to treat in all its bearings, and I shall confine myself to portraiture.

" . . . Lighting the sitter *photographically* means putting him into a much stronger light than usual, and keeping him there a sufficiently long time to affect a certain process. In the early days of the art it meant putting him for half an hour in the strong sunshine; now it means confining him for a short time in a sort of glass case. The *arrangement* and *management* of light, to the photographer, means the keeping it on the sitter and off the camera and lens, and also away from the plate during preparation and development. 'Lighting the sitter' to the *artist* means quite a different thing. It means putting him in a weaker light than usual, admitted through one window only and allowed to fall in such a way that all the forms and contours of the individual are more markedly seen than in ordinary apartments. . . .

"The photographer may, or may not, be an artist. He may photograph things just as they happen to come, never altering or modifying; or he may, by art, so contrive that scarcely anything he does, is not influenced and improved by this controlling influence. Happily, individuals of this class are becoming numerous, and to them the feeling constantly is: How are the great truths of art to be combined with the wondrous graphic power of photography?

"To these persons the phrase 'How to light the sitter' means: How are the advantages of the artist's studio and the photographic studio to be combined, and the disadvantages of each to be avoided. How shall we put light enough into the artist's studio to photograph the beautiful model without losing the half-tones, or how shall we introduce the proper modelling and delicacy into the photographic studio without losing rapidity and brilliancy?

" . . . I think the so-called glass room should be looked upon as a piece of apparatus for putting the sitter into—a sort of camera—and the apertures in the sides and roof should be made more after the idea of the artist's studio—that is, not to light the room, but to light the sitter. These apertures or windows should be made no larger than is necessary to produce the effect. Every sensible photographer is jealous of each ray of light that enters the camera that does not produce a picture, and so should he be of every ray that enters his illuminating room that plays no part in illuminating the figure. I have called the glass room, for distinction's sake, the illuminating room, and I like the term. It may or may not be a *glass room;* I know of many that have very little glass in them. The glass is a mere accident; it is not the glass that admits the light, it is the aperture in the wall that admits the light, and the glass is merely used to keep off wind and weather. It is these holes, or apertures, that have to be so arranged as to allow the light completely, but gently and softly, to illuminate the object. This should be the sole purpose of this room.

"As it is an admitted photographic maxim that we cannot get a brilliant print except from a good negative, so it may be equally affirmed that we cannot get a good negative except from good lighting. A well-lighted picture is one where the light falls chiefly in one direction, so as to form well-defined shadows. Then a secondary light should be admitted just strong enough to light the shadows, so that they should not appear too hard and abrupt, but delicate and soft. If the secondary light does not do this it is not strong enough, and the picture will have too much contrast. Discussion has taken place as to whether the chief light should come from the front, the side, or the top of the sitter. I think, wherever the light comes from, from *one* distinct direction, it is bad and the shadows produced will be too decided (I am speaking of lighting the sitter's head). I think the principal light should come in such an oblique direction as to be partly from the top, partly from the side, and partly in advance of the sitter. I think the secondary light should almost be reversed, so that the two sets of lights should be in opposition. I think there should be a gentle struggle between the two for mastery, but *one* must always predominate and govern, not rudely and violently, but gently and sweetly. Shall we be poetical and say the principal light must be masculine and vigorous, and the secondary one be soft and feminine, so that the effect of the union is such a happy blending of light and shadows with a myriad of connecting half-tones that you cannot tell where one ends and the other begins, but where each is present to strengthen and beautify the other, like two souls wedded in perfect harmony?"

Æsthetic questions of the kind just discussed were, or should have been, of interest to every photographer. The professionals had, in addition, to deal with problems arising from business routine. The mentality and behaviour of many clients, for instance, belong to this category. They often were, and no doubt still are, severely taxing the photographers' reserves of patience and good humour. Much has been written about the ignorance, prejudice and exasperating demands of the sitters and the slogan "keep smiling" could not seldom with greater justification be addressed to the photographers than to their models.

A very amusing little essay on this subject was published by MR. MUDD in *The Yearbook of Photography and Photographic News Almanac for* 1867 (London).

" . . . Then the people who want taking with little dogs on their knees, or with big ones by their sides, and, worst of all, the babies. Those small, bullet-headed infants, all alike. Surely, *one* portrait would do for all. These little darlings are usually accompanied by Ma, Pa, and Nurse, who 'assist' the photographer. The scenes in the studio at such times would be amusing if they were not so annoying. The 'Baby' is perhaps brought in asleep; but before its many outer garments are removed, it is staring wide awake, and suspiciously lively. Well, the performance commences by all three attendants upon the child attracting its attention at the same time from different parts of the room; which proceeding causes the sweet infant in its desire to see all to jerk its head about rapidly. This will never do, so the nurse is dismissed from the room, not before having popped a bon-bon into the mouth of the 'pet' which, of course, must be masticated and cleared off before proceeding further. Then *pater familias* is instructed to make a horrid noise, and rattles a stick inside his hat. This has such an appalling effect upon the child, that its mouth falls wide open, and its eyes start from its head. As such an expression is unfavourable, the terrors are withdrawn and something playfully attractive is tried in which the tender parents play a conspicuous and somewhat ridiculous part. But this results in making things worse, for the infant is now chuckling with laughter, and kicking out freely for very glee. Now it throws up its little pink legs, and now its arms; now pulls horrid faces from sudden and inward gripes, now laughs idiotically; and as it stretches out its hands about its face, the patient photographer standing by his camera, waiting for a chance, will swear it is now 'taking a sight' at him with its tiny fists. . . . Final scene—nurse rushes in and springs a rattle under baby's nose; mother sings as she tosses the roaring babe, while *pater familias* stands by in an absent and feeble way blowing a penny trumpet."

In the middle of the 'sixties, DISDERI, a famous Parisian portrait-photographer and a brilliant business man at that, invented the "Carte-de-visite" photograph. This was a small picture, approximately 4 by 2½ inches in size, which became soon very popular as it enabled the photographers to cut down their fees considerably. The demand for these pictures was tremendous and consequently hundreds of studios were opened during this period, employing an army of assistants, producing masses and masses of "Cartes-de-visite". DISDERI and a number of other photographers of repute managed to keep up a fairly high quality even under these conditions of pressure, but the majority of photographers, quickly trained as they were and not burdened with any sense of responsibility for quality, regarding quantity of output only as the yardstick for success, led professional portrait photography slowly but surely towards the lowest level which it ever reached in the whole of its history.

In December 1862, the *Photographic Journal* published an article: "Opinion on Cartes-de-Visite of Celebrities" in which the author expressed his anxieties about the state of affairs in professional photography. The following brief extract is the introductory paragraph to an exhaustive review of many individual photographs:

" . . . There is always too much of the studio in these *carte-de-visite* portraits. We do not merely refer to the extraordinary backgrounds which some of these operators

> employ. Why a respectable old lady is to be represented as sitting without a bonnet in a chair placed upon a Brussels carpet in the middle of a terraced garden, is always very perplexing; and it is equally difficult to understand what the foundation can be for the theory, which seems to have possessed the minds of several of the photographers, that the middle-aged men of England generally spend their lives leaning against a Corinthian pillar, with a heavy curtain flapping about their legs, turning their backs to a magnificent view, and obviously standing in a frightful thorough draught. But the studio shows itself, not only in the accessories, but in the very face of the sitter. The whole scene is reflected there. The irritation of the head-rest, the despairing desire to fulfil the operator's injunctions, the ill-humour at having been placed in an uncomfortable or unbecoming attitude, and the consciousness that that attitude is being photographed—all speak in the face of the sitter and communicate a very unflattering likeness of him to the world. Many shades of distress cross the face of a man who is sitting to be painted; but the painter is not forced to copy them. The camera is too slow to be able to be so truthful with impunity. Portrait photography will be very far from its perfection until the apparatus is rapid enough to take their sitters unaware.
>
> "This want of the *artis celare artem*, which is a great fault in the camera's performances in portraiture, unfortunately shows itself very strongly in the pictures of the celebrities which line the shops in our great thoroughfares. It is the only drawback to a series of likenesses which are otherwise admirable. Statesmen are decidedly favourable subjects for photography, because the character of their faces depends on form and not on colour. Their intellectual power has usually given them strongly marked features; and their parliamentary labours have given them complexions upon which the tones of the photograph are an unquestionable improvement. But, on the other hand, their faces are too expressive to permit them to conceal the fact that they are sitting for their pictures; and consequently there is an unnatural appearance about almost all of them. If the pictures are preserved to aftertimes, posterity will be much puzzled to reconcile the expressions of some of them with the recorded history of their lives. . . ."

A few years after the "Carte-de-visite" made its appearance the "Cabinet" photograph was introduced, measuring approximately 6 by 4 inches. It was a sort of glorified "Carte-de-visite" which appealed to a more exacting clientele. The size of it afforded certainly a bigger scope to the efficient photographer, and it pronounced of necessity the shortcomings of the inefficient one. Both the "Carte-de-visite" and the "Cabinet" dominated the market almost for fifty years.

In 1861, the Collodion process was somewhat improved by introducing dry Collodion plates which could be kept in stock for several months without losing their sensitivity. This did away with a number of difficulties, but the drawback was that the plates were extremely slow. Many photographers, therefore, continued to use the wet Collodion plates until, in 1871, the Gelatine Dry plate appeared on the scene and again changed the whole situation.

It is with mixed feelings that we look back to the Collodion period. The relief that all this super-size equipment, all this toil and labour has gone

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for good, is mingled with the regret that to-day's easy technique has, in general, not resulted in an intensified striving for pictorial individuality but rather in a levelling and tiresome uniformity of angles and effects. On the other hand, our admiration for the old pioneers who journeyed around the cities and the countryside with their cumbersome gear, who followed armies into distant countries and climbed the highest mountains at the head of numerous porters and mules in quest of photographic discoveries is slightly dimmed by the fact that none of these men seemed to be conscious of a theme which was lying almost at their doorsteps: the social conditions of the Mid-Victorian era. Thus the pictorial record of that time, as presented by photography, is incomplete and, to a certain degree, prejudiced in favour of the bright and sunny side of life.

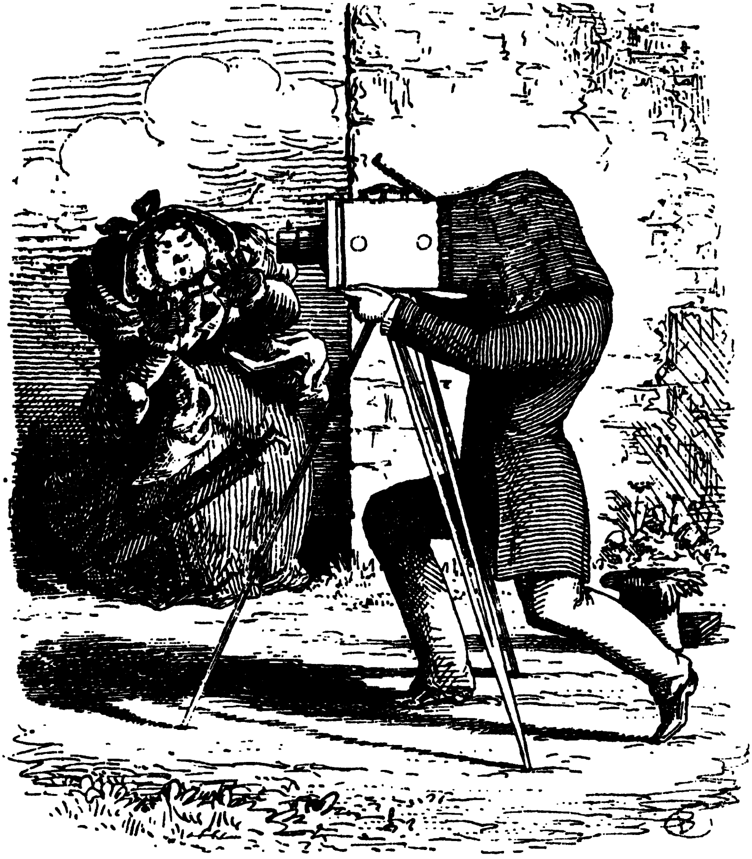
In 1862, ROGER FENTON gave up photography and offered his entire equipment for sale. The notice in the *Photographic Journal* announcing this sale sounds like the death knell for the whole Collodion period which, in spite of its shortcomings, was one of the most progressive and picturesque phases in the history of photography.

> " . . . We are informed that the sale will commence at Stevens' Rooms, King Street, on the second Tuesday in November, and that the whole stock of thirty lenses, from the small stereoscopic to the monster pieces of photographic artillery used for the production of negatives of 3 feet square, will be included in it. Nearly 1,000 negatives on glass, principally of large sizes, many of which have never been seen by the public, will be disposed of at the sale.
>
> "The photographic carriage, by the aid of which most of the large landscape negatives were taken, the cameras, printing frames, in fact, sufficient material of every kind to supply a dozen men with the means of working in the 'black art', will be offered to the best bidder. Mr. Fenton is resuming his former profession of the law (*on reviens a ses premiers amours*), and, having made such a resolution, thinks it wise to deprive himself of all that might be a temptation to him to revert to past occupations. . . ."

The Appearance of the Gelatine Dry Plate.

The change from the paper to the glass negative took place as soon as a suitable carrying substance for the chemicals was found. A corresponding medium was necessary for the abolition of the wet process in favour of the dry plate. Gelatine was tried out, for this purpose, as early as 1850, but with little success. Further experiments were made during the following years, but it was only in 1871 that RICHARD LEACH MADDOX, a doctor by profession, was at last successful. He is rightly regarded as the father of the Gelatine Dry Plate.

The reasons which prompted his research and the procedure he followed



A PHOTOGRAPHIC PICTURE.

ELDERLY FEMALE [*WHO IS NOT USED TO THESE NEW-FANGLED NOTIONS.*] "O SIR! PLEASE SIR! DONT. FOR GOODINESS SAKE. *FIRE*, SIR!" ——

Caricature, by Cuthbert Bede, 1855.

were laid down by him in a letter addressed to W. JEROME HARRISON in 1887 and published by this author in his *History of Photography* (London, 1888).

"Portswood, Southampton, Aug. 19, 1887.

"DEAR SIR,

"In your favour of the 17th inst. you express a wish 'to know more how and why my attention was directed to gelatine and silver bromide?' If you find the answer rather a complex one you must excuse it upon its threefold character.

"Firstly, the cost of the collodion, with the troublesome manufacture of the cotton. Secondly, health more or less affected by its constant use when working, as I was in my camera, a dressing room, often at a very high temperature in the summer months; and thirdly, dissatisfaction with the dry methods for the photo-micrographic work upon which I was much engaged.

"The first reason may be dismissed as of little moment when there was an adequate return upon the work done. But not so, when there was an absolute loss even in an amateur's point of view. The second reason was a more important one. Being often shut up for hours in the said camera, the temperature at full summer heat, I found the system completely saturated with the vapour of the collodion, so much so that it could be tasted in the breath on awakening in the night, and sleep was generally much disturbed and unrefreshing, while it was much needed to restore the nervous energy wasted by constant suffering, often very severe in character; moreover there was an outcry in the household that the collodion vapour unpleasantly pervaded every room in the house. The third reason was that I could find no satisfactory dry or sticky process that did not embrace the first two reasons, and add another of its own in the shape of additional time and trouble in the preparation of the plate.

"These reasons set me experimenting, sometimes on paper, sometimes on glass, with vegetable gummy matters as lichen, linseed, quince seed; and starchy substances as rice, tapioca, sago, etc.; and with waxy material as Japanese vegetable wax. Often I fancied I was just within the doorway when the door closed and other plans had to be tried. All the literature I could find, bordering on the subject, was searched, but it rather bewildered than enlightened. At last I turned to the animal series and wasted many eggs and some little silver; then I went to the finest isinglass at about twenty shillings the pound weight, and the very first experiments led me to hope I was on the right track; something had to be altered, as I was using iodo-bromide in varying collodion proportions, and the isinglass did not appear to yield a sufficiently even surface in spite of all kinds of filtering; yet confidence was felt that a vein had been struck. Search was now made in the house for a packet of Nelson's gelatine; this afforded a better surface, especially as the plates were dried generally on a hot one-inch thick iron slab, and tested at once. Then came the mixture of isinglass and gelatine, but the advantages pointed to gelatine. The little plates were tried under a negative, then on out-of-door objects, but it was impossible to get some laurels depicted in anything more than black and white. I remembered that someone had stated that the bromides were better suited than the iodides for foliage—now came the experiment of diminishing the iodide and increasing the bromide until it settled into bromide alone. Yet I was not satisfied; but experimenting went on so rapidly that often I did not wait to filter the gelatine before mixing the bromide of silver in it. Before this period, that talented experimenter, Mr. Carey Lea, had spoken of the use of *aqua regia*, and my attention was turned to it, fancying that its use would decompose some of the gelatine and furnish the extra silver a chance of forming an organic salt of silver which might possibly improve the image. After working with this and getting more satisfactory results, various substances were mixed with the gelatine, as gum, sugar, glycerine, etc., which gave different tints to the developed negatives, and it was seen that it only required further experimenting to put gelatine into use, for some of the negatives were fairly plucky, and half-tones beautifully rendered; but compared with collodion the gelatine was slower, although it stood its ground with some of the dry processes.

"Paper had not been neglected, for among the paper trials with the gelatine was one which I thought gave much promise, the tint on developing equalling much of the kind of the present day. This was obtained by the addition of a small quantity of arsenide of silver.

" . . . Health had now fairly broken down, rest was needed, so that very little further experimenting was done; and as there were other irons in the fire demanding attention, the process was offered to a firm in Southampton from whom I used to get my albumenized paper; but it was found that there was no time to continue the necessary experiments to raise the rapidity and enhance its value. This was done at different stages by others, almost two years after I had freely given to the public what had cost me much time and labour.

"The world has been benefited and I have been honoured with the gold medal and diploma by the Jurors' Committee of the Inventions Exhibition. Do not for one moment suppose I ignore the work of other hands in *perfecting* the gelatino-bromide process and thus giving it its world-wide value in all departments of photography, especially that far-reaching one of its adaptation to astronomical research. I am only too thankful to feel that I have been merely the stepping-stone upon which others have safely put their feet, though now and then there cropped up the old story of the prophet in his own country—let it pass, this is the Jubilee year. I am grateful to those abroad and at home, who, like yourself, have recognized the original claim of

"Dear Sir, Yours most truly,
"R. L. MADDOX."

MADDOX died while his process was still in the stage of development and it was left to others to complete his invention. During the following years, the purity and sensitiveness of the emulsion were improved, and its preparation simplified. In principle, the procedure was, and still is, as follows:

Gelatine and Potassium Bromide in equal quantities are dissolved in water, and Silver Nitrate added to it at a high temperature. The resulting solution is then poured onto a glass plate.

It did not take many years for Dry Plates to be manufactured commercially, but these factory-made plates were for a long time regarded with suspicion by the professional photographers and it was only at the beginning of the 'eighties that they were universally recognized and used.

A few years later, in 1888, EASTMAN introduced the roll film, and from then on glass and celluloid were almost the only bases used for negative emulsions.

The decade 1880–90 thus marked the beginning of a new chapter. In photography, as in every other field, mass production began to supersede private manufacture. The era of self-made plates and chemicals came to a definite end.

Mechanical improvements and inventions followed each other in rapid succession: during the next twenty years orthochromatism, panchromatism, antihalation, better and faster lenses, smaller and highly efficient cameras widened the scope of photography and multiplied its application. The progress of photography was no longer only the result of individual performance, but to a large extent of general industrial research.

At this point we can, therefore, conclude our survey of the negative processes in early photography. MADDOX was the last technical exponent of the "classical" period; those who followed belong to a new era.

"Folding Changing Bags. Light, cheap, effective, will fit all Tripods. Square ones for hand use can be had."—(Practical Guide to Photography, 1887.)

IN WORKROOMS OF YESTERDAY

The development of the positive methods during the period under discussion was not less remarkable than that of the negative processes. In many a way the continuous striving for greater perfection was even more pronounced on this than on any other side of photography. It is, after all, the *print*, and not the negative which is submitted to and seen by a critical public.

The progress on the negative side takes place more or less behind the doors of the laboratories and darkrooms and cannot always be appreciated by the uninitiated, while any advance of the positive technique is at once perceptible to everybody. No wonder, therefore, that most photographers were more concerned about the print than the negative and on a perpetual search for better and more effective printing methods. If we venture so far as to compare Photography to Music we may say that the negative technique supplies the theme while the printing methods play the part of the various instruments which take the theme up and present it according to their inherent laws and the taste and abilities of the executing artist.

It is obvious that the Victorian era with its atmosphere of rich sentiment and its tendency to ornamental embellishment was particularly stimulating for the creation of so many printing varieties: in the same period in which four negative processes came into existence dozens of printing methods were invented. This is very characteristic even if we admit that a positive process is an easier problem for the inventor than a negative technique.

In the very early stages the problems of the negative and positive methods were closely linked up with each other but the later tendency of the printing process was, as we shall see, to become more and more independent of the negative.

THE DIRCT POSITIVE

The question of a special printing technique did not arise at all during the "Daguerreotype"—and later the "Ambrotype"—periods. Both these techniques produced positives straight away, the first one on metal, the second on glass. The picture was a straightforward and simple reproduction of nature, presenting the image exactly as the lens had seen it. No "controlling", no enlarging was possible, not even retouching in its proper sense. The only things the photographers could do in order to enhance the beauty of their photographs was to colour them by hand and put them in lockets or cases of leather or metal.

The first "Daguerreotypes" were all reversed, later a prism was used in the camera for eliminating this fault. The silvered copper plate which carries the picture is bound to reflect the light strongly and most "Daguerreotypes" have therefore to be viewed at an angle. The usual size is 2 by 3 ins., but much smaller sizes were also frequently used.

Larger sizes were rare, they became only popular during the "Ambrotype" period. "Ambrotypes" are direct positives produced on glass by the Collodion process. They are the results of the attempt to continue the direct-positive technique at a time when the general course had already swung round in favour of the negative-positive idea. The characteristics of both "Daguerreotype" and "Ambrotype" are their beautiful rendering of minute detail.

PRINTING-OUT PAPERS

The first photographic prints on paper were obtained by early experimenters long before photography was "properly" invented. Thomas Wedgwood, a member of the famous potter family, produced "Shadowgraphs" in 1802. He placed leaves, lace, feathers, etc., on papers coated with a solution of silver nitrate and exposed them to the light of the sun. The papers darkened where they were hit by the light leaving white silhouettes of the objects placed on them. They were, of course, "negative prints". None of them have been preserved as no fixing agent was known at that time.

The Silver Print

Talbot proceeded on the same lines, calling his prints "Photogenic Drawings". His papers were coated with table salt and sensitized with silver chloride. He used the same papers later for making copies from his "Calotype" paper negatives; the results were called "Silver prints". These primitive papers were the only ones known for a long time and consequently employed by all "Calotype" photographers. Their use extended even into the Collodion period.

The disadvantages of these papers were that they had to be used within a few days of the time of coating, and that the images penetrated the tissue of the papers giving the photographs a sunken and often dull appearance. They were violet, sepia or brown in tone and, from a pictorial point of view, appeal to our present taste by substituting the abundance of detail of the "Daguerreotype" by broad areas of light and shadow. Only a few of TALBOT's and HILL's original silver prints are fully preserved, most of them have suffered from the deterioration of the paper fibre.

The Albumen Print

In 1850, the Belgian BLANQUART-EVRARD succeeded in preventing the positive image from "sinking-in" by coating papers with a layer of albumen before sensitizing them. This kept the picture on the surface, retaining at the same time all the details rendered by the lens. The albumen prints are of a high brilliance, brown in tone and very pleasant in appearance. Almost all the photographers of the Collodion period used this paper. A modification is the Matt Albumen Paper which became very popular in later years, and is still in use to-day.

Cellodine and Gelatino-Chloride Papers

In 1865 the albumen paper found a rival in the Cellodine paper in which collodion took the place of the albumen. This paper is faster and also of a high, if somewhat patchy, brilliance.

After the invention of the Gelatine Dry Plate it was natural to think of using gelatine for paper emulsions. In 1882, the first Gelatino-Chloride papers appeared on the market and two years later they were manufactured commercially under the name of "Aristo" papers. They are also still obtainable to-day, either matt or glossy. They show better contrast, are twice as sensitive as the albumen papers, and render detail extremely well.

Toning

All the papers listed so far are characterized by the fact that they are printed out in the printing frame to full visual strength. It is easy to work them or to interrupt the printing process at any desired moment. Most of these papers need toning in addition to fixing as they would otherwise lose much of their original strength and colour. Gold solutions give red-brown or dark violet tones, platinum the various shades of black. To-day separate toning can be avoided by using self-toning papers.

The Platinum Print

Although silver salts are the most common sensitizing chemicals, experiments with other metals have also been successful. For special purposes iron salts are used instead of silver. The best-known of these processes and for many years a favourite of the pictorialists is the Platinotype. This technique was invented in 1873, but became popular only in 1890. From then on it was in fashion for almost twenty-five years. The platinotype is of a warm black or sepia tone, combining good detail-rendering with broad pictorial effects. There have been many variations of the platinum technique, which allows prints to be made either by the printing-out or by the developing method.

DEVELOPING PAPERS

One of the most exciting moments in the history of photography was the day when DAGUERRE discovered that he could start the process of producing an image by giving a relatively short exposure and letting the mercury vapours finish the job. Up to 1837, he had to leave the plates in the camera for many tedious hours until the image was fully visible. After that time DAGUERRE experimented on different lines: he reduced the time of exposure—after which the plate showed no visible sign of change—and developed the latent image in his mercury box until the picture appeared. TALBOT soon adopted the same system which reduced the time of picture making almost to a tenth of its former length. An additional factor assisted this procedure considerably: the introduction of bromide into photography. This salt was discovered in 1826 by BALARD, who soon afterwards produced silver bromide and noticed its great sensitiveness to light. TALBOT experimented already in 1839 with bromide, although, of course, with the idea of producing negatives. Yet, obviously, the principle of developing latent images could just as well be applied to prints as to negatives. In 1851, the first experiments with bromide papers were made, but it took twenty years before satisfactory results were obtained.

The Bromide Paper

The Bromide paper, as we know it to-day, began its career in 1873. Since then it has conquered photography rapidly and almost exclusively. Only seconds are necessary for producing a print where many minutes, if not hours, were needed previously with printing-out papers. The printer became independent from the unreliable daylight, enlarging was simplified, the whole printing process revolutionized. Bromide papers, mostly black-and-white in appearance, are available in many varieties and have become the mainstay of modern printing. One of their disadvantages is their high sensitivity, which allows for little individual control.

The Gaslight Paper

Attempts were made to reduce the speed of the bromide emulsion in order to obtain a more flexible paper for certain purposes. The results are the slow bromide and the Chloro-Bromide papers (collectively called gaslight papers). The chloro-bromide paper was first used in 1883. It is of a warm tone, easy to manipulate and specially suitable for difficult negatives. This fact made it one of the favourite papers of the portrait photographer and the amateur.

"CONTROLLED" PRINTING

Copying from negatives by contact-printing is obviously a "direct" or "straight" printing method. Any departure from it leads us into the field of "controlled" printing.

Even straightforward enlarging and print-retouching are, in a wider sense, controlling methods. Enlarging experiments had been made as early as 1843, but only in the 'sixties did enlarging come into general use. In the same decade negative retouching was introduced, but the pencil had then for a long time been used for giving the finishing touches to positives.

Some Daguerreotypists, for instance, did not hesitate to draw, or rather engrave, moving persons or animals into their pictures. All these are simple controlling devices applied with the intention to make the photographs more effective or technically more perfect.

More elaborate controlling methods, however, were soon invented. There were various reasons for it, one of them standing out prominently. The further photography advanced technically the more many photographers began to suffer from an inferiority complex. Their trouble was that they were not regarded as artists but as mere technicians. Although Hill, Nadar and Cameron had shown that photography was capable of creating an art of its own, their work was unknown to the general public.

Even had it been more widely known it is doubtful whether their art, which was bewildering in its newness and aloofness from any convention, could have been at all appreciated. Any spinster who for the sake of "self-expression" set up her easel in front of an ancient doorway or some other object was *a priori* granted the right to call herself an artist, a "privilege" which was denied even to the most efficient and inspired photographer.

The grotesque part of it is that most of the photographers themselves were prejudiced by these traditional views, although they hoped that photography would come to be regarded as art as soon as it would make sufficient use of the acknowledged attributes and paraphernalia of art. The mountebank amongst them promoted himself to the rank of artist by donning a blue velvet jacket and a Lavalière cravat. This appears farcical enough, yet the ways many serious-minded photographers set about to lift photography from its Cinderella existence were not less odd although their theories moved on more complex lines.

To them, the problem was: how to get away from the "reproduction-of-nature" stage to that of "creation" and individual control. Some photographers tried to achieve that in a direct way, by posing and draping their models and backgrounds as for a pantomime. Others believed in the expedient of technical or chemical methods to be applied to the negative or, more often, the print. To the first group belonged, for instance, REJLANDER and strangely enough J. M. CAMERON who, imbued with the sentiments of her intellectual friends, devoted an important part of her time to the creation of an absurdity which we may describe as "Pre-Raphaelite photography". MRS. CAMERON compensated for these errors of taste by giving us her splendidly imaginative yet simple and straightforward portraits. REJLANDER, on the other hand, penetrated deeper into the jungle of what he believed to be the true art of photography by way of the "combination print". He was the first to try and prove that art could be created along the lines a jig-saw puzzle works.

Combination Printing

The idea of making composite pictures is an old one. It was probably prompted by the limited latitude of the early emulsions which could not register detail in both high-lights and shadows. In order to obtain, for instance, a landscape picture with details in the foreground and clouds in the sky, two separate negatives were made from the same point of view.

One was exposed with a view to foreground rendering, the other to the sky part. These two negatives were then combined on one print by first shading off the sky portion and printing the foreground, and then by covering the lower half of the paper and printing the sky negative. The "joint" was made to coincide with the horizon and thus became invisible.

This simple principle was taken up by Rejlander and developed into an elaborate technique. He gave his reasons for this in a paper read to the Royal Photographic Society in April 1858. They were:

> "First: to be competitive with what might be expected from abroad.
>
> "Second: to show artists how useful photography might be as an aid to their art.
>
> "Third: to show plasticity of photography and to prove that one is not confined to one plane but may place figures and objects at any distances."

The immediate motive for taking up this technique was a discussion Rejlander had with an artist in 1855, recounted in *The Evolution of Photography*, by John Werge (London, 1890).

> "I had taken a group of two. They were expressive and composed well. The light was good and the chemistry of it successful. A very good artist was staying in the neighbourhood, engaged on some commission. He called, saw the picture, was very much delighted with it, and so was I. Before he left the house he looked at the picture again and said it was 'marvellous', but added: 'Now, if I had drawn that, I should have introduced another figure between them, or some light object to keep them together. You see, that is where your photographers are at fault. Good morning!' I snapped my fingers after he left—but not at him—and exclaimed aloud: 'I can do it.' Two days afterwards I called at my artist-friend's hotel as proud as—anybody. He looked at my picture and at me, and took snuff twice. He said: 'This is another picture.' 'No,' said I, 'it is the same, except the addition you suggested.' 'Never!' he exclaimed, 'and how is it possible? You should patent that.' "

Rejlander's combination prints were mostly of a symbolic character, containing several figures. His most famous piece of work, produced from about thirty different negatives, was the composite print "Two Ways of Life", in which a great number of nude and half-dressed women represent the good and evil traits of human character. This picture was the subject of much argument; it was regarded as "indelicate" and opened long-drawn-out discussions about the question of whether photography was a suitable technique for creating "that sort of thing".

Rejlander's procedure in combination-printing was as follows. He first made a pencil sketch. With a pair of compasses he measured on the focusing glass the proportional size of each figure according to the sketch. After that he took the corresponding negatives. The figures were then printed together on one sheet of paper which was covered with velvet apart from where the figure appeared. The main difficulty was to obtain the desired shade and tone of the figure so that it matched the other ones. No retouching was done on the print.

Rejlander was the originator of "creative" combination printing. He was a clever and ambitious man, but his technique was still rather crude and direct. More subtle and of a higher technical quality were the combination prints of Henry Peach Robinson, who followed in Rejlander's footsteps and who is, to-day, regarded as the past master of early composite photography.

One of his first attempts was "Fading Away", produced and printed from five negatives in 1858 (illustration, page 88). The "joints" in this picture occupy unimportant places and were easily hidden. The mechanical difficulties were not so great as the selection of the models, and training them for their work. The principal figure had a "three years practice in expression" at the time this picture was taken. "Fading Away" shared the fate of Rejlander's "Two Ways of Life", evoking also much controversy as to the propriety of showing a dying young girl by the "brutally" realistic medium of photography.

Robinson continued to make composite photographs for many years, some of them, like "Carolling", of a charming joyfulness (illustration, page 89), others of a more serious character. He took the principle parts in a small yard behind his house, 50 by 20 feet in size. There was a bank partly covered with wild flowers and ferns, a mountain spring and other features. In this garden he was able to obtain the foreground to almost any variety of landscape. His procedure in printing was in principle the same as Rejlander's, but as Robinson's activity extended far into the Dry Plate period, he had greater freedom in the choice of subject and the treatment of his pictures.

Robinson lectured on his technique to the Photographic Society of Scotland in 1860 and concluded his paper with the following words:

> "I think that we are now as perfect as possible in manipulation—as far as black-and-white are concerned. We want to apply these discoveries to higher purposes than we have hitherto done. The means of producing pictures in our art are as good as producing paintings in Raphael's time, and nothing but a deep and earnest study is required to make our pictures rank with the works of the most famous men."

In spite of this self-assured statement the system of combination printing was condemned by most of the leading critics. It was perhaps partly due to this fact that, after ROBINSON had retired from his work, no more large-scale attempts at composite photography were made for almost fifty years. Another reason was that new printing methods appeared which made a strong appeal to the pictorial photographers.

Pigment Processes

The attempts of "raising photography to the height of an art" which have just been described were directed at attaining the object by dramatization. The school of photographers which now came into existence tried to achieve the same object by different means. The idea was to elevate the photographs to the works of fine art by making them as similar to them in appearance as possible. Photographs were no longer supposed to look like photographs but like paintings, drawings or engravings and this end was reached by using pigments in the printing stage. The methods involved were the "Carbon", "Gum-Bichromate", "Oil" and "Bromoil" processes.

> "These processes differ essentially from the straight methods in so far as they constitute a technique in which the negative becomes more or less a mere basic matrix, supplying the theme for the creative work which takes place in the printing process. By a series of more or less complicated operations, and with the help of pigmented papers, a picture is produced which by rights can no longer be called a photograph. Each such creation is actually an original, as it is almost impossible to obtain two or more absolutely similar prints by the Pigment methods. By choosing various colours, by putting on much or little pigment, by applying several layers to the print, by transferring and re-transferring the image, by controlling the various stages of the processes in certain ways, it is possible to create effects in the same way as in drawing, painting etching and other forms of the fine arts."—From *Immortal Portraits*, Focal Press, London, 1941.

All Pigment methods are based on the *Carbon Process*, invented in 1858, but not generally used until 1873. The idea is that a paper is coated with a film of gelatine, carbon (or any other pigmenting matter), and potassium bichromate (the sensitizing agent), and then exposed to light under a negative. Where the paper is protected by the dense parts of the negative, the gelatine remains soluble while the other areas become partly or wholly insoluble. These insoluble parts form the picture after the soluble parts have been washed away in a hot water bath. A variant of this process is the "*Carbro*" technique, in which a bromide paper is used as a foundation.

The *Gum-Bichromate* process is a direct descendant of the Carbon process. It was invented in the middle of the 'nineties. The name indicates that gum arabic is used as carrier for the colouring matter. The characteristic of this process is that not only one but several layers of pigmented film can be applied to the paper on top of each other which makes it possible to use several colours in one print and to obtain certain other effects.

The *Oil Process*, invented in 1905, is different in so far as the pigmenting operations take place in bright light *after* printing, thus permitting great personal control. The *Bromoil Process* is a modification of the Oil process using a bromide paper as a base.

The *Photogravure Process*, finally, is a photo-mechanical method, introduced to England during the 'nineties from Vienna. In a series of manipulations a photograph is transferred to a copper plate which is then etched in several acid baths. Printing ink is applied to the finished metal plate and copies are made with the help of a printing press, either by hand or by machine printing. Another early photo-mechanical process, represented in this book, is the *Woodburytype*.

The main appeal of the pigment processes to photographers lies in the fact that the possibilities of individual control are great and manifold. Richest half-tones in high-lights and shadows produce effects unobtainable by any of the straight printing methods. Unwanted details can be subdued or eliminated and broad tone areas created. The finished prints can be made to resemble almost any style of painting, from the old Dutch School to the Impressionist or Pointillist technique.

The portable dark-room tent.—(Drawing from Punch, 1850.)

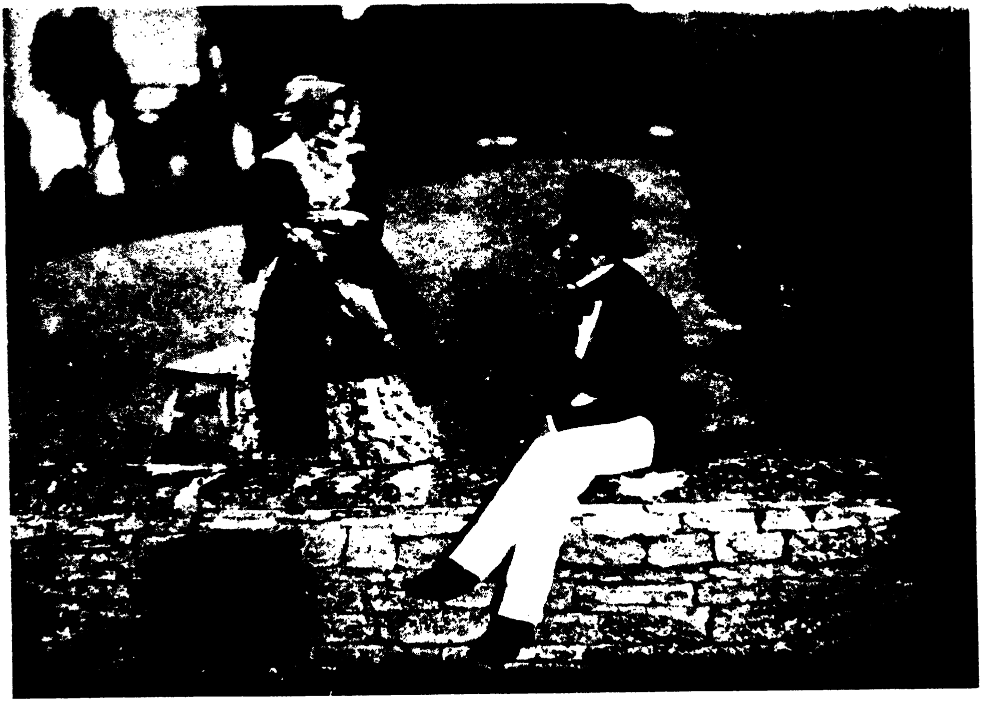
WILLIAM HENRY FOX TALBOT

By Claudet

About 1852

Daguerreotype, 2½″ by 3″

The Royal Photographic Society's Collection



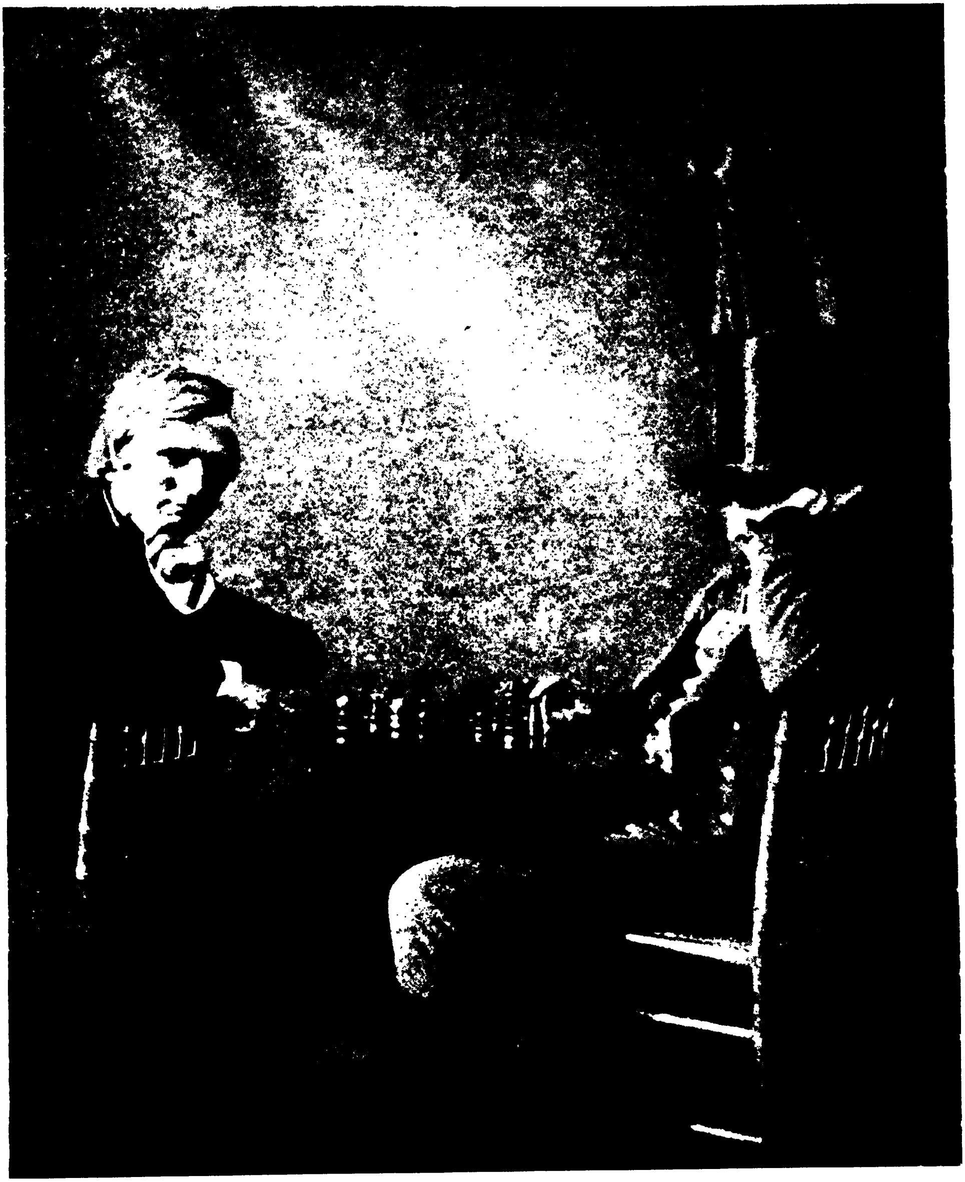
TWO FIGURES

By W. H. Fox Talbot

About 1840

Calotype, 6″ by 7½″

Science Museum, London, Crown Copyright



THE CHESS PLAYERS

By W. H. Fox Talbot

About 1840

Calotype, 5½″ by 7½″

Science Museum, London, Crown Copyright

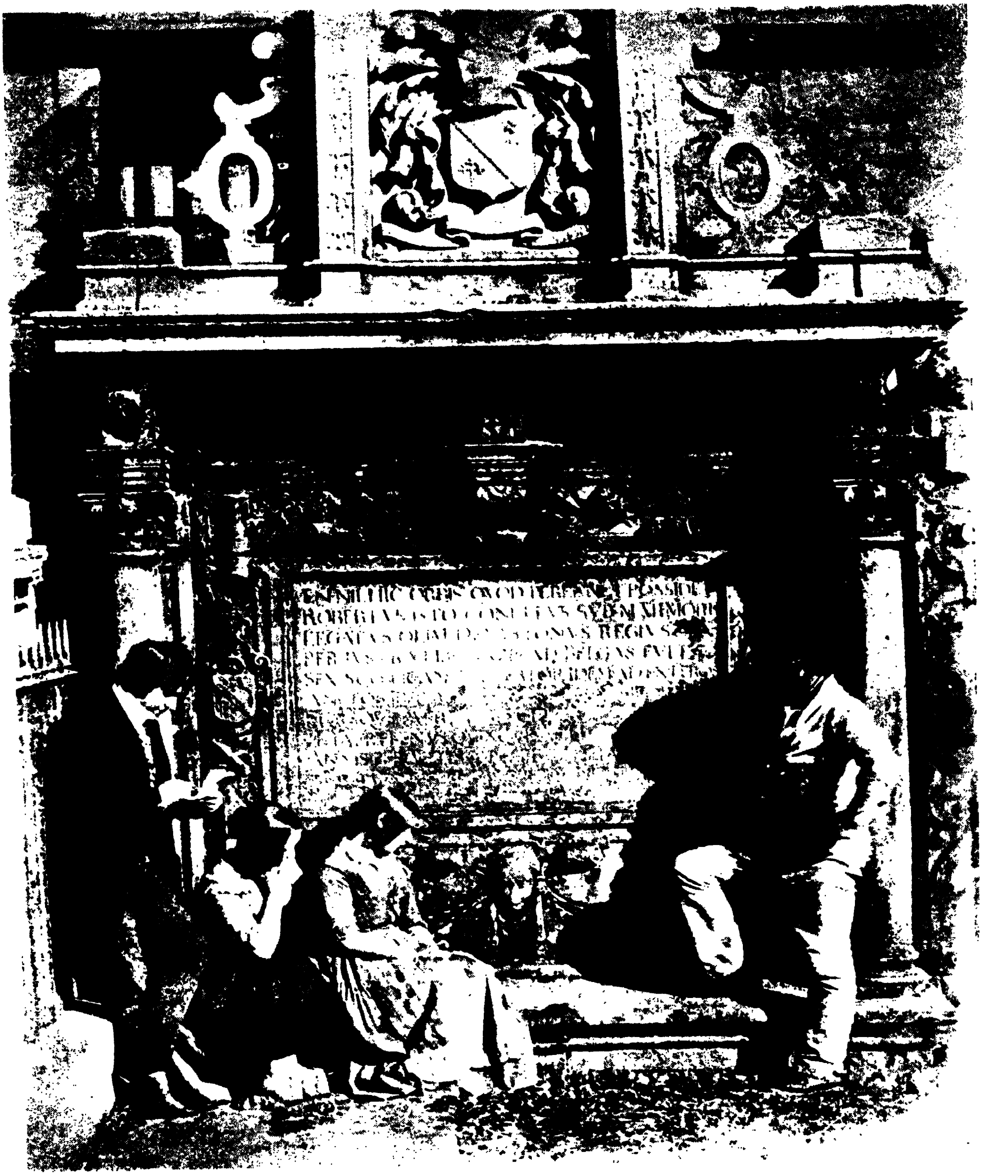
SUNDAY SCHOOL

By David Octavius Hill

About 1845

Calotype, 6″ by 8″

F. C. Inglis Collection



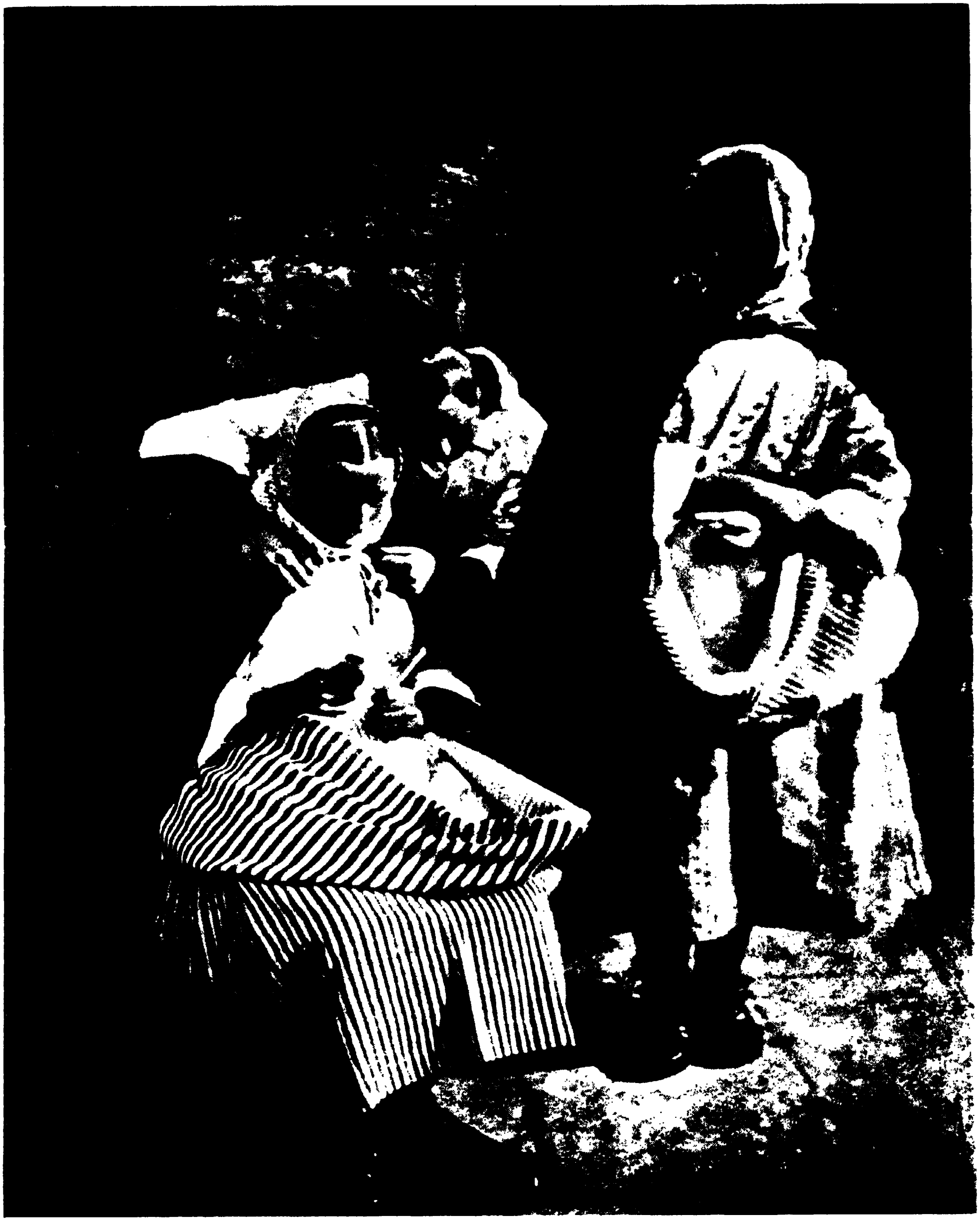
AT THE GREYFRIARS CEMETERY

By David Octavius Hill

About 1845

Calotype, 6″ by 8″

The Royal Photographic Society's Collection



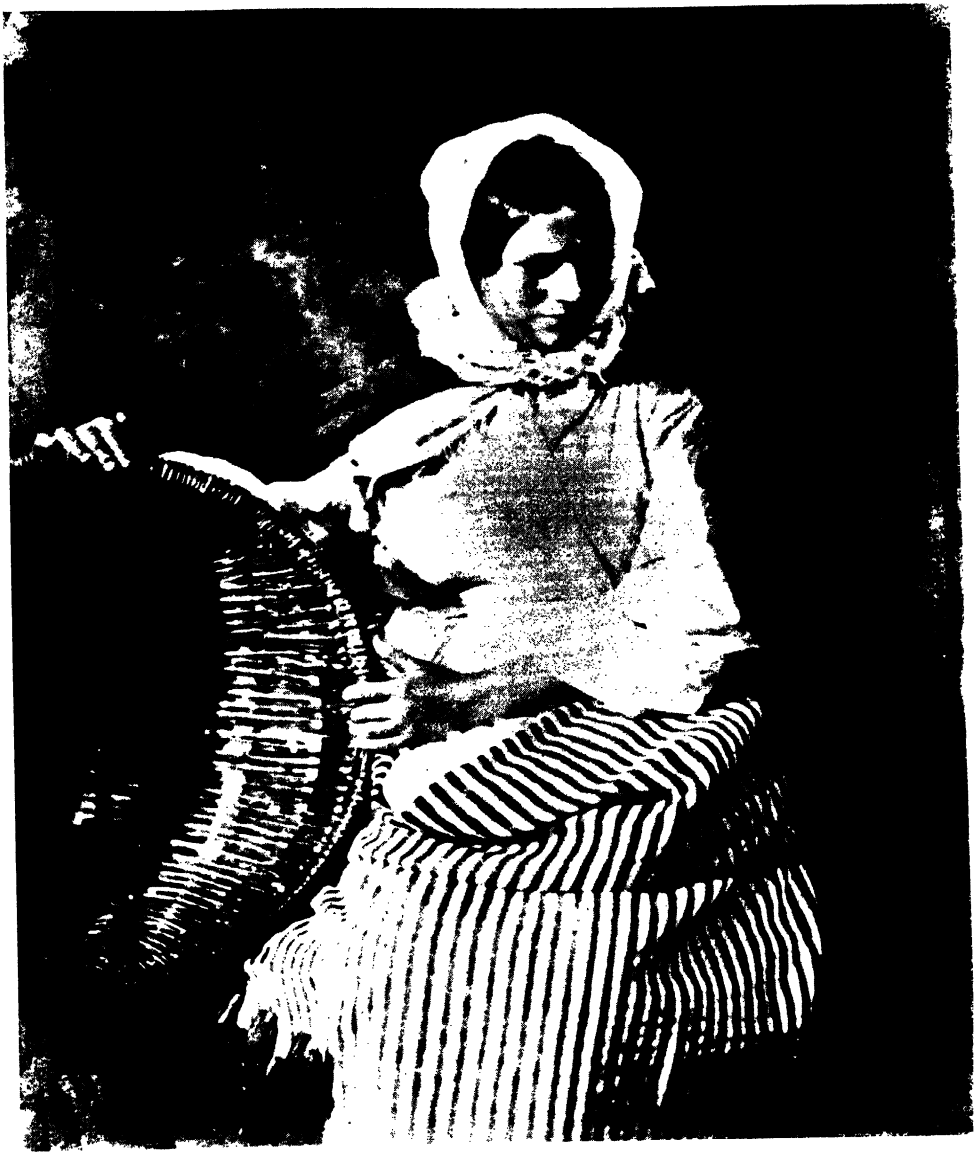
FISHWIVES

By David Octavius Hill

About 1845

Calotype, 6″ by 8″

The Royal Photographic Society's Collection



NEWHAVEN MADONNA

By David Octavius Hill

About 1845

Calotype, 6" by 8"

The Royal Photographic Society's Collection

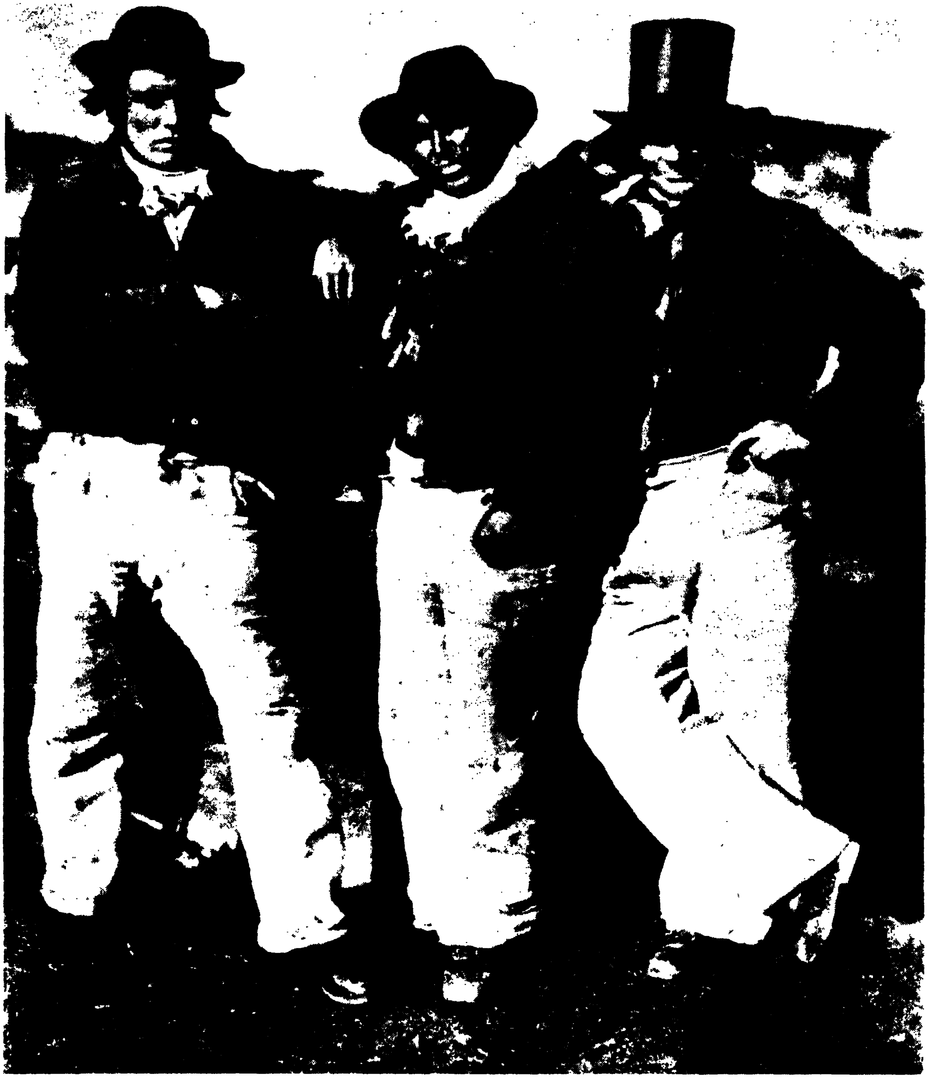
SOLDIERS

By David Octavius Hill

About 1845

Calotype, 6″ by 8″

F. C. Inglis Collection



SAILORS

By David Octavius Hill

About 1845

Calotype, 6″ by 8″

The Royal Photographic Society's Collection

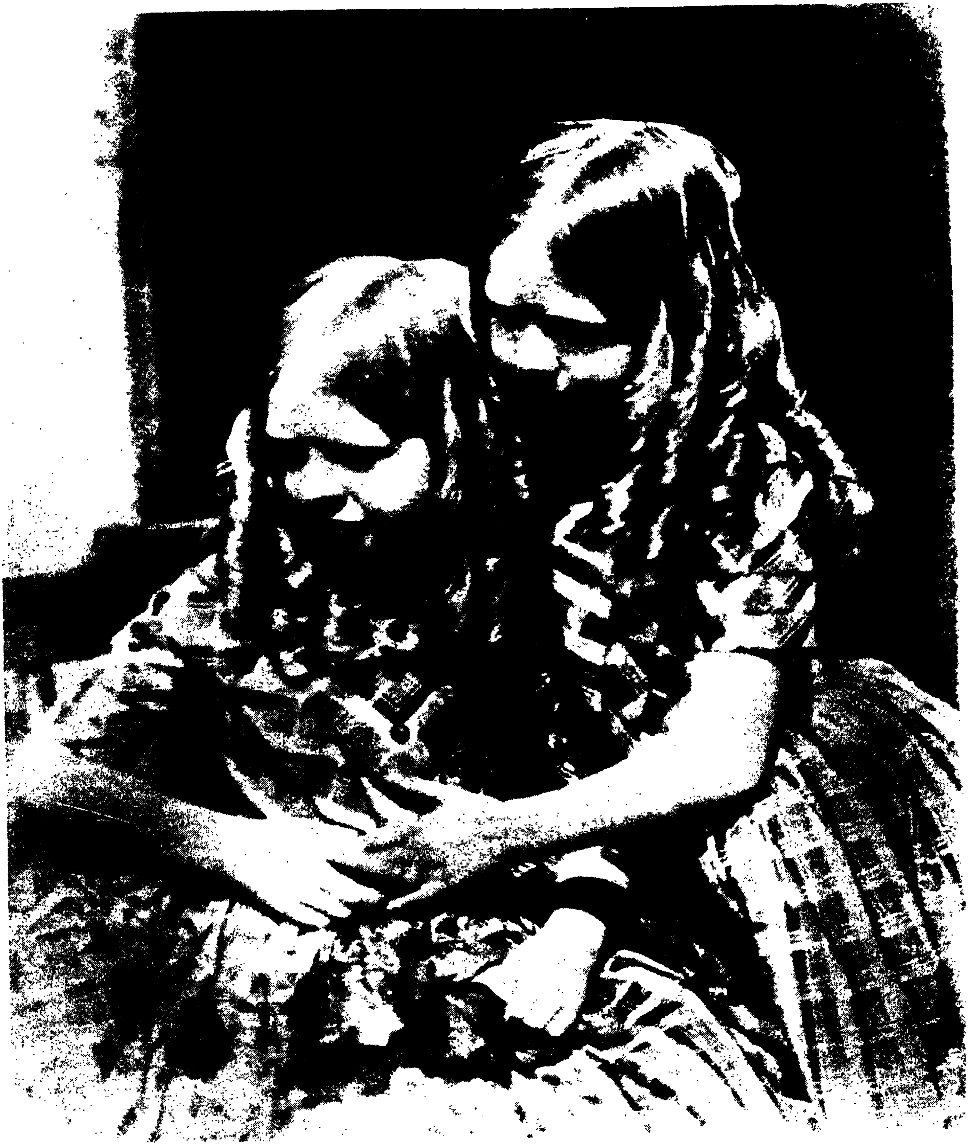
MASTER HOPE FINLAY

By David Octavius Hill

About 1845

Calotype, 6″ by 8″

The Royal Photographic Society's Collection



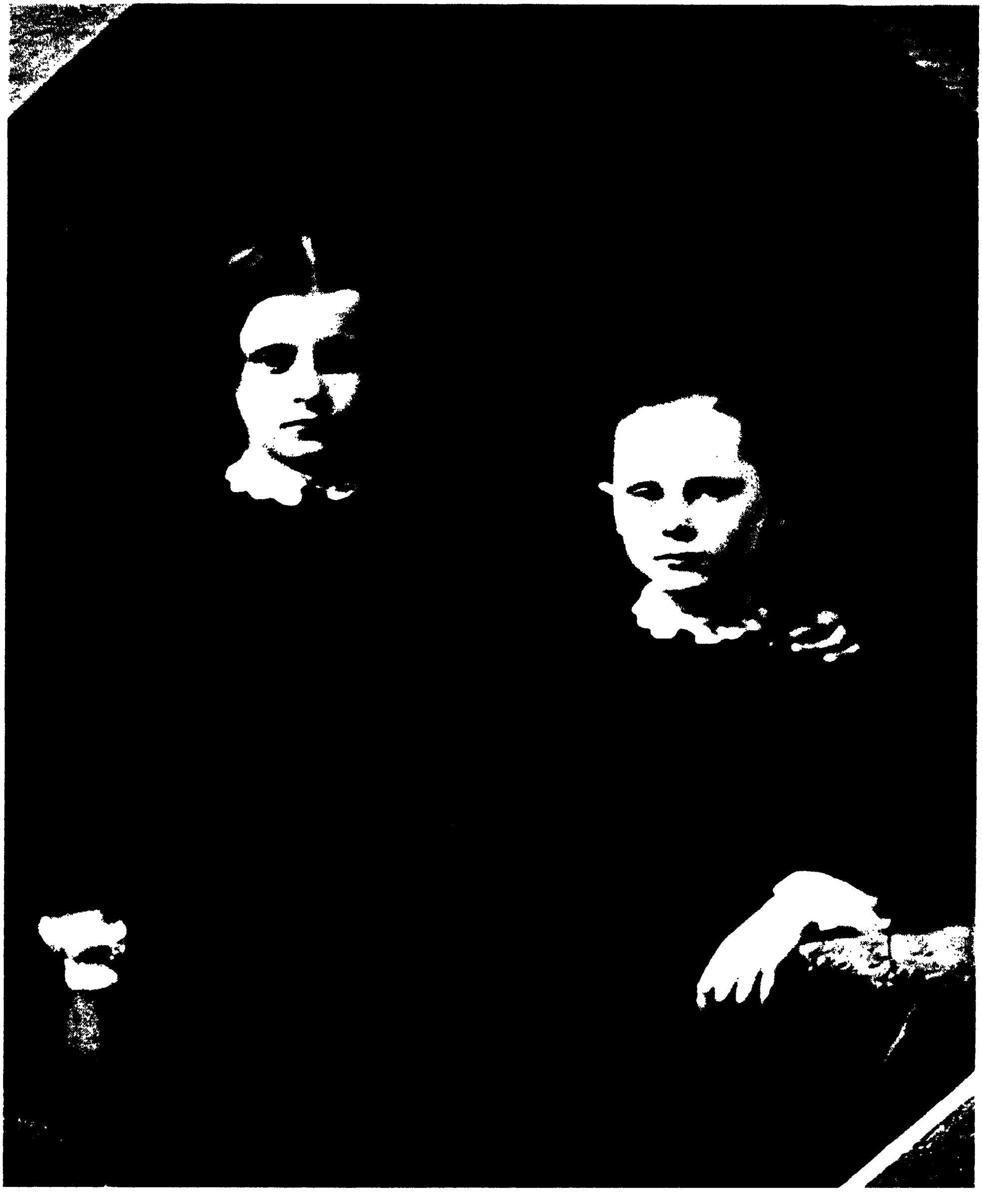
TWO GIRLS

By David Octavius Hill

About 1845

Calotype, 6″ by 8″

The Royal Photographic Society's Collection



SISTERS

By an unknown photographer

About 1845

Daguerreotype, 2½" by 3½"

The Royal Photographic Society's Collection

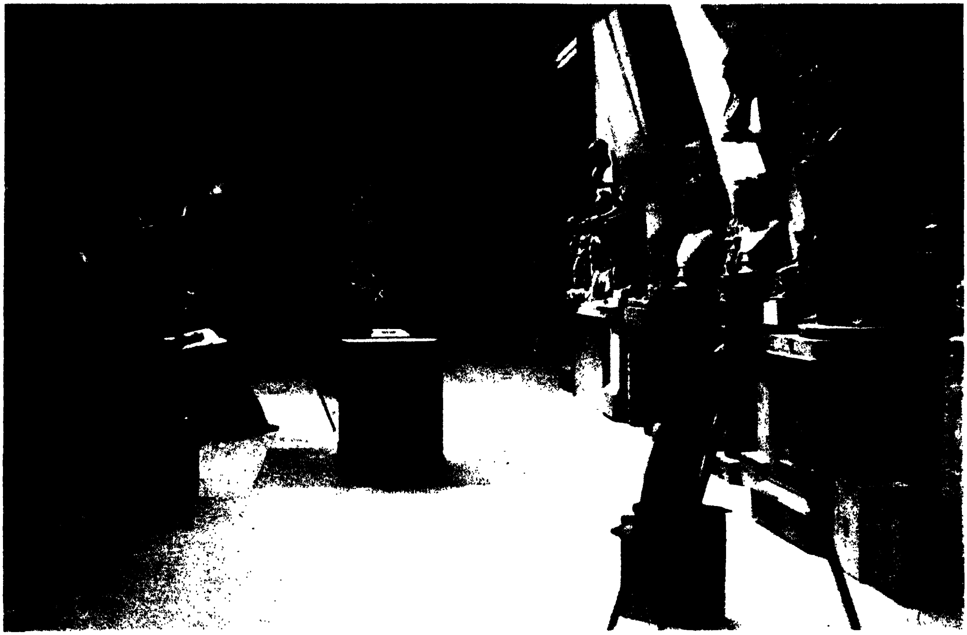
ROYAL PRINCESSES

By Roger Fenton

About 1858

Calotype print, 11½" by 12½"

The Royal Photographic Society's Collection



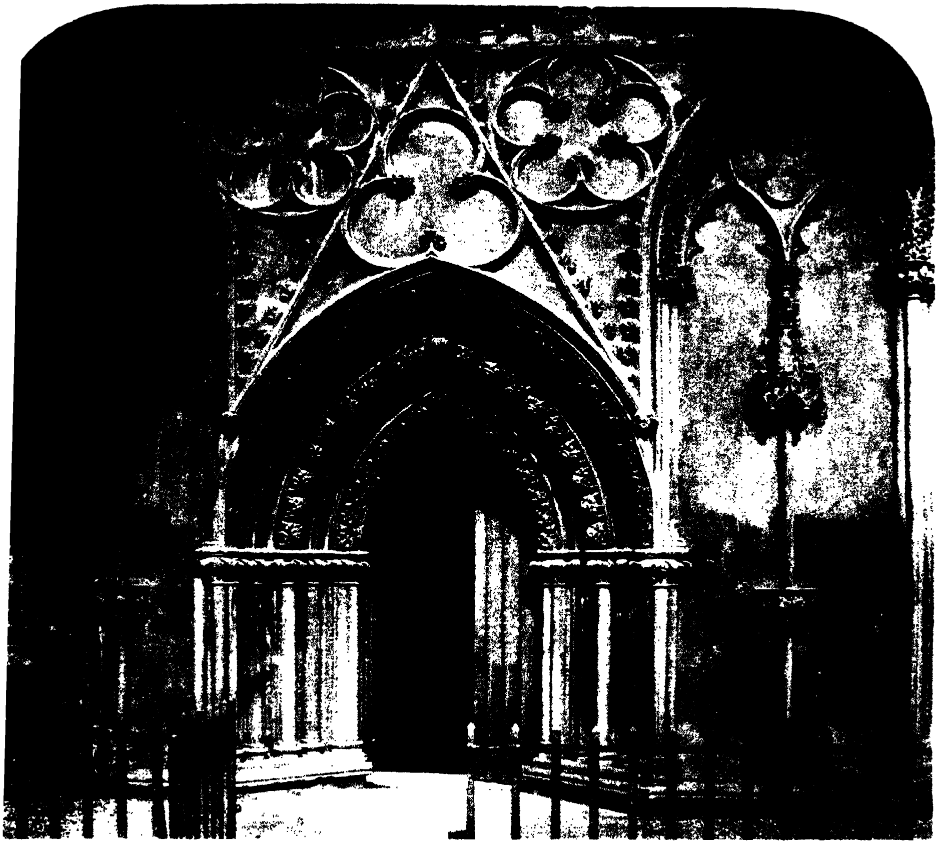
IN THE BRITISH MUSEUM

By Roger Fenton

About 1860

Collodion plate, Albumen print, 10½″ by 11½″

The Royal Photographic Society's Collection



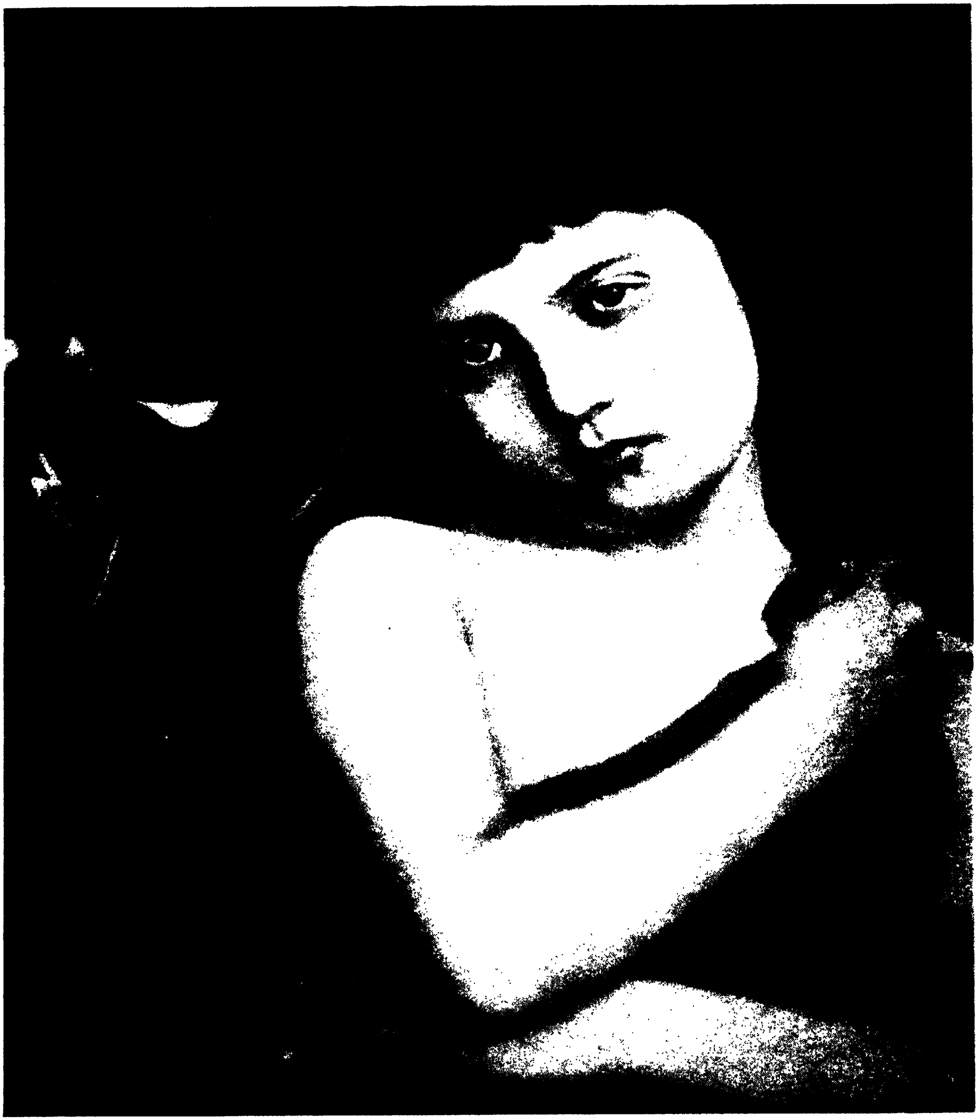
SIDE PORTAL OF LICHFIELD CATHEDRAL

By Roger Fenton

1854

Collodion plate, Albumen print, 11″ by 11″

The Royal Photographic Society's Collection



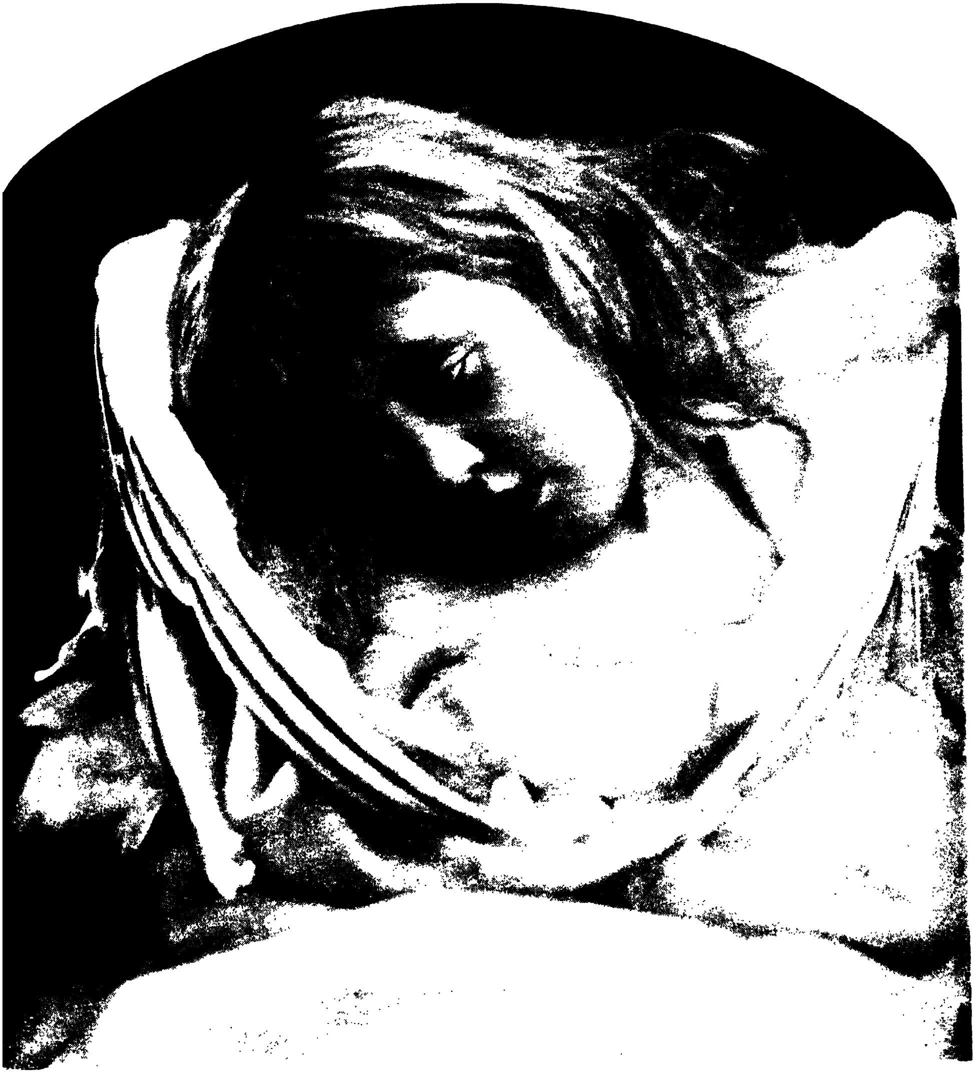
ST. JOHN THE BAPTIST

By Julia Margaret Cameron

1872

Collodion plate, Carbon print, 10½″ by 13″

The Royal Photographic Society's Collection



NESTLING ANGEL

By Julia Margaret Cameron

1870

Collodion plate, Carbon print, 11″ by 13″

The Royal Photographic Society's Collection

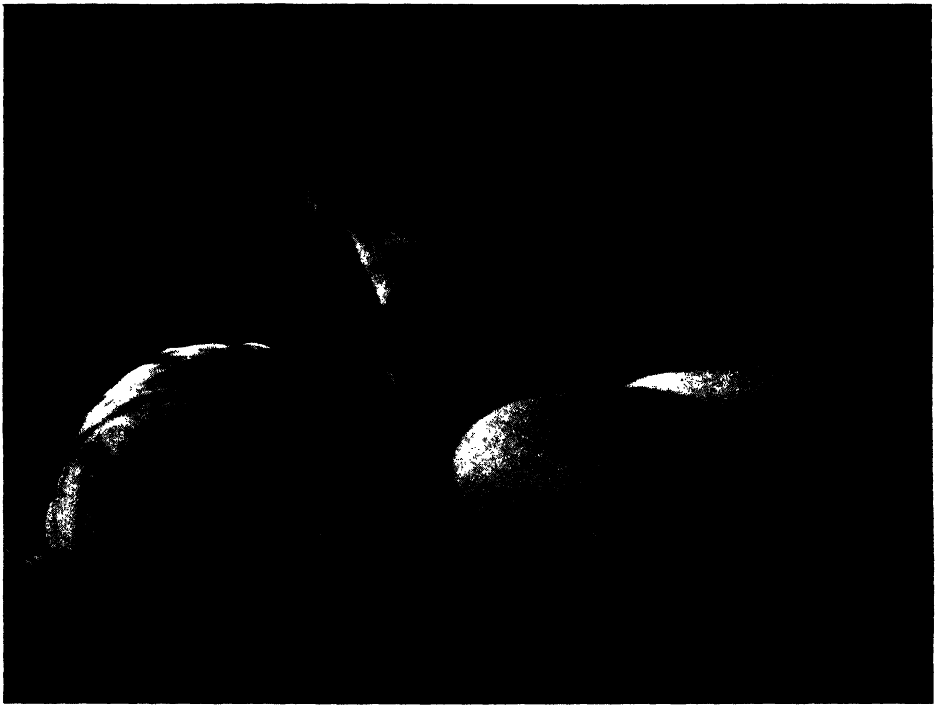
ROSEBUD GARDEN

By Julia Margaret Cameron

1868

Collodion plate, Silver print, 11" by 13"

The Royal Photographic Society's Collection



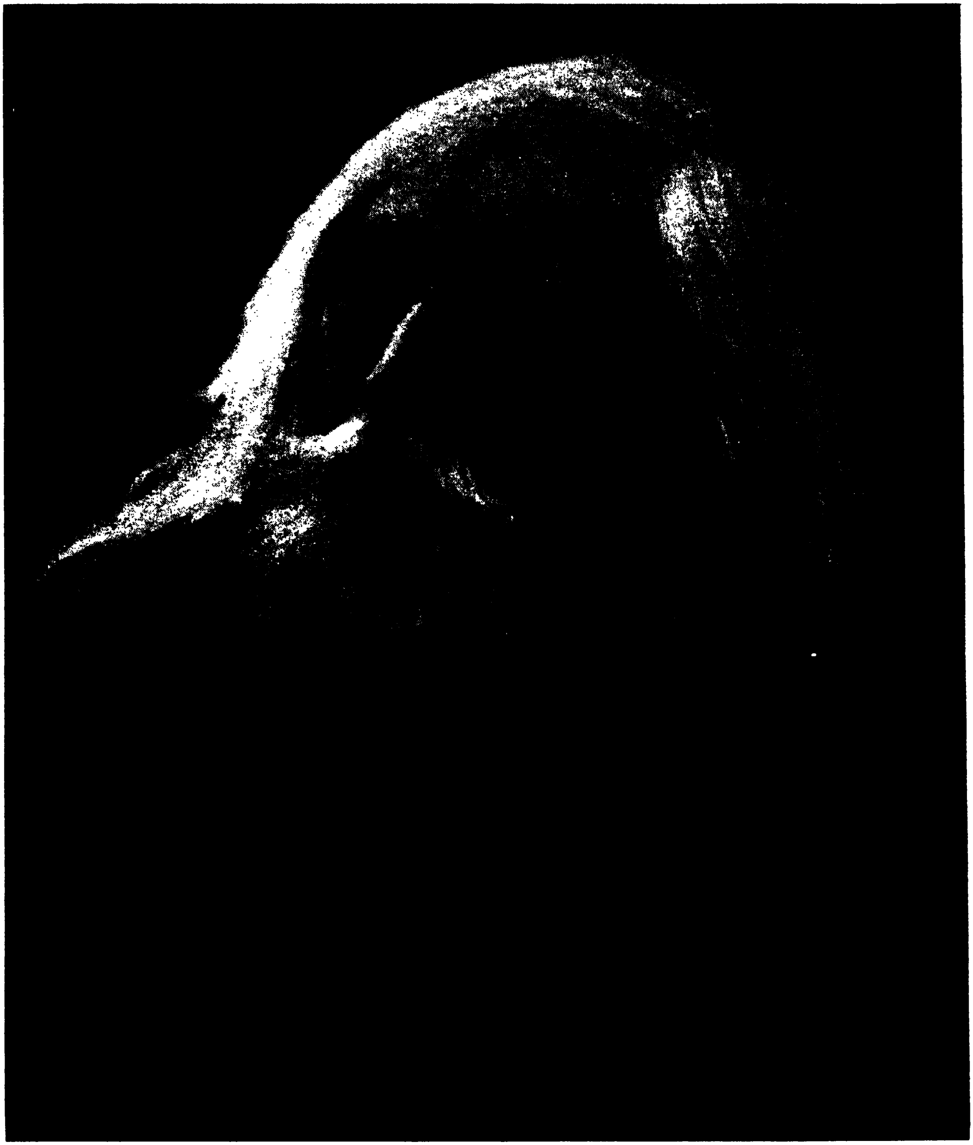
HER GRANDCHILD

By Julia Margaret Cameron

1870

Collodion plate, Silver print, 9″ by 11″

The Royal Photographic Society's Collection



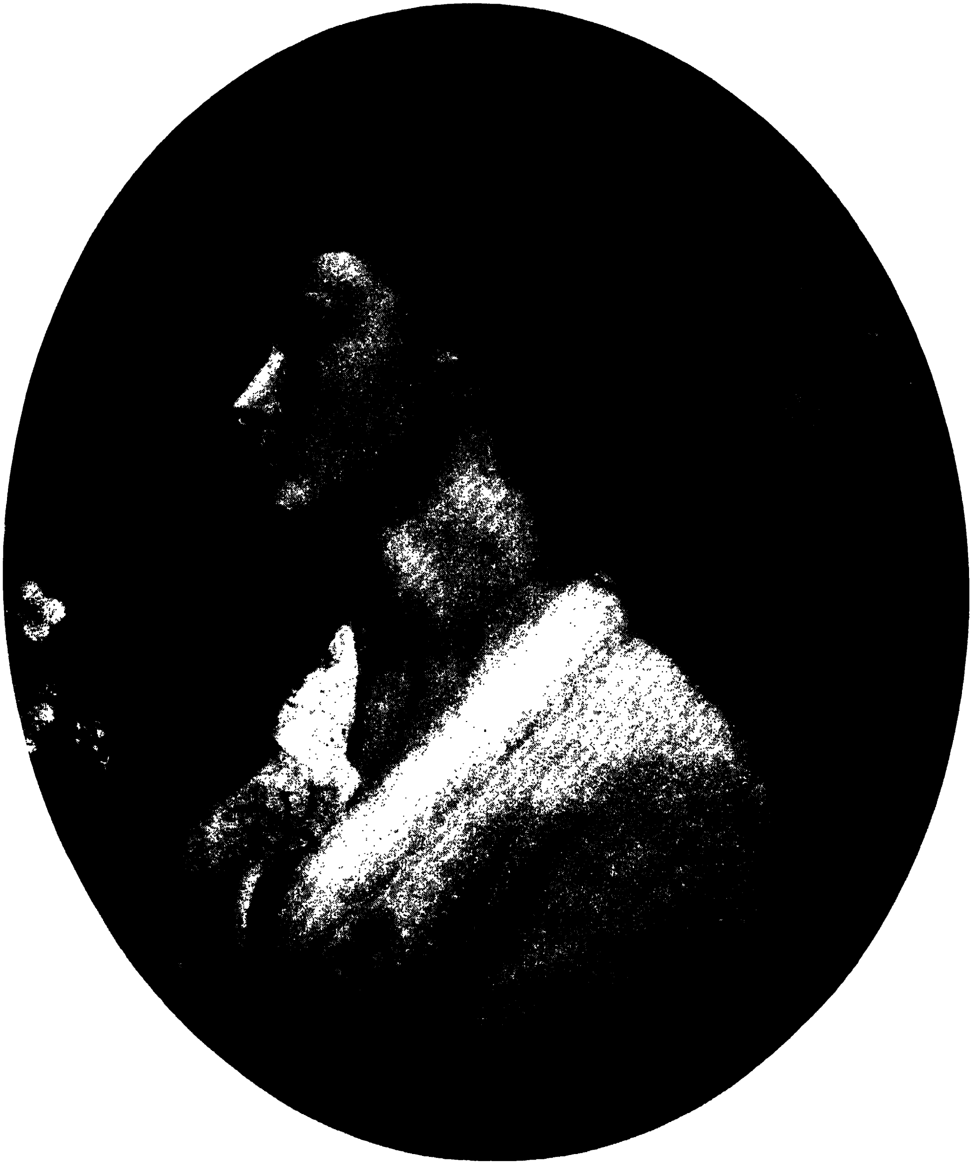
HER HUSBAND: CHARLES HAY CAMERON

By Julia Margaret Cameron

1874

Collodion plate, Carbon print, 9″ by 12″

The Royal Photographic Society's Collection



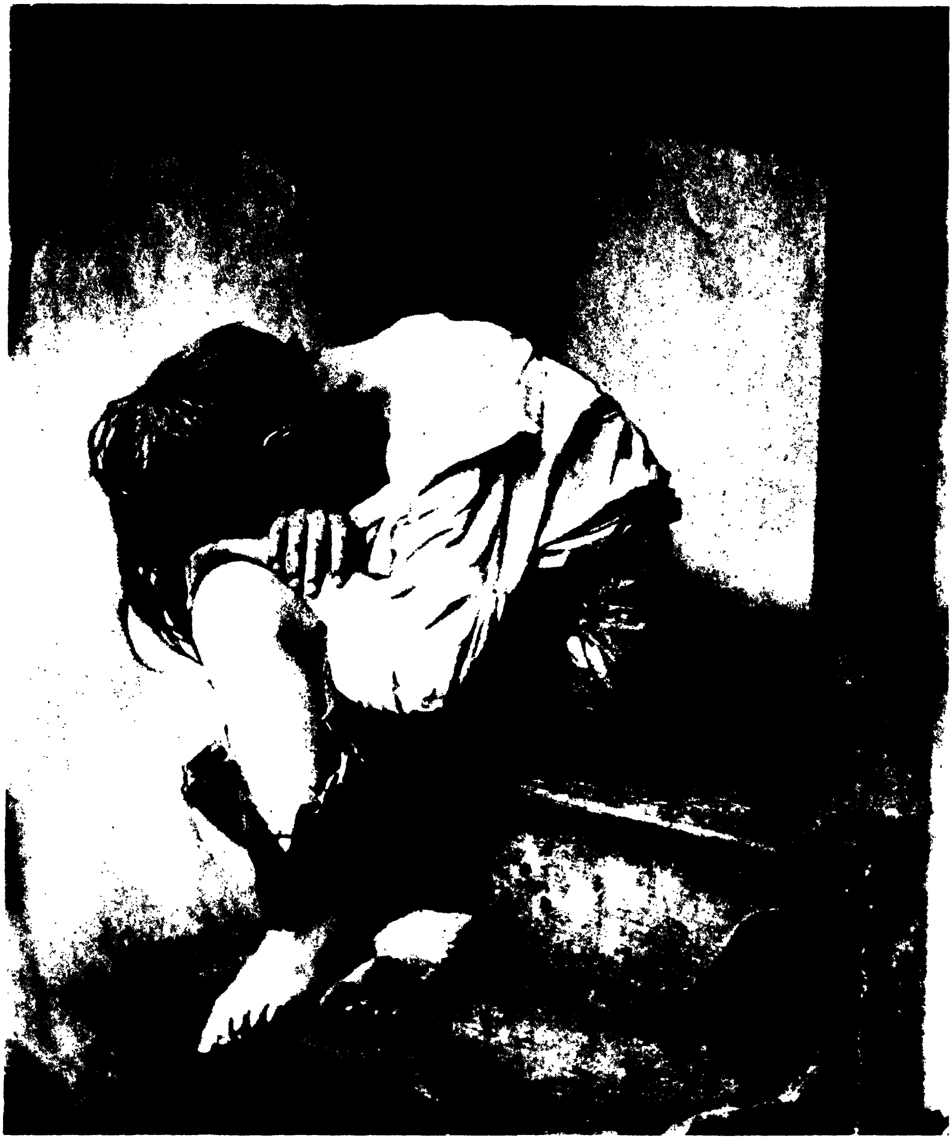
ALICE

By Julia Margaret Cameron

1872

Collodion plate, Carbon print, 9″ by 12″

The Royal Photographic Society's Collection



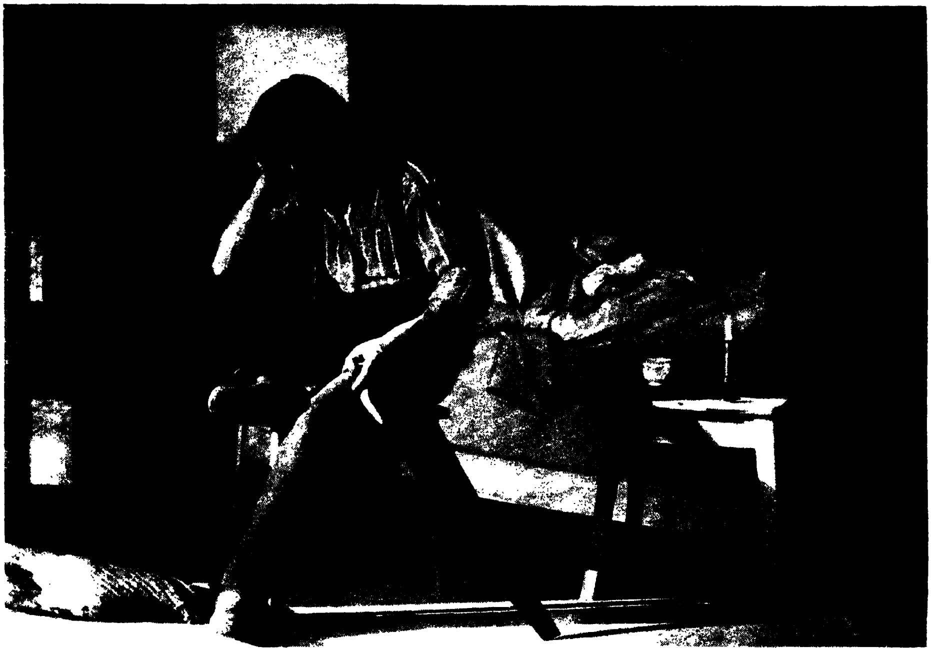
POOR JOE

By O. G. Rejlander

About 1865

Collodion plate, Carbon print, 7″ by 9″

The Focal Press Collection



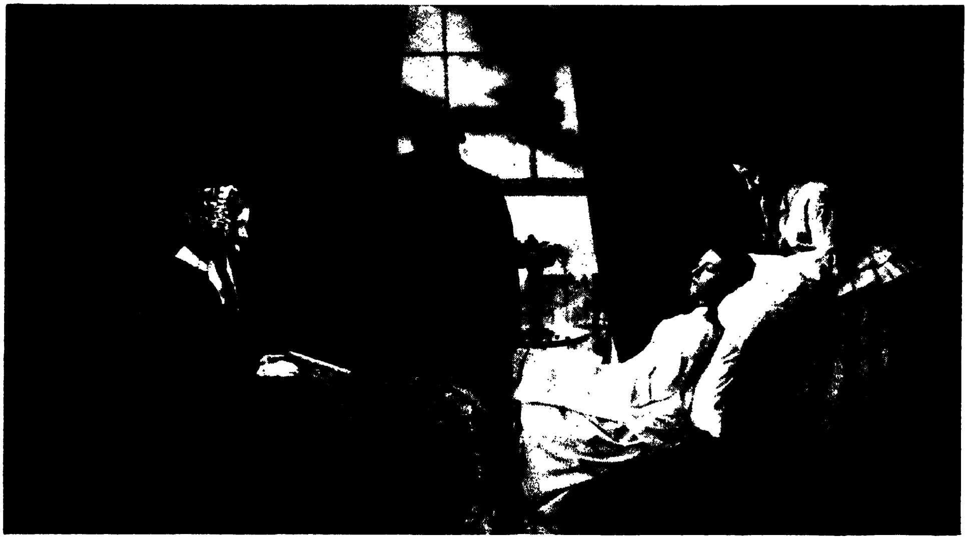
HARD TIMES

By O. G. Rejlander

About 1865

Collodion plate, Carbon print, 7" by 10"

The Royal Photographic Society's Collection



FADING AWAY

By Henry Peach Robinson

1858

Composite photograph, Carbro print, 21″ by 30″

The Royal Photographic Society's Collection

CAROLLING

By Henry Peach Robinson

1887

Composite photograph, Platinum print, 13" by 25"
and the original Composition sketch for it
The Royal Photographic Society's Collection

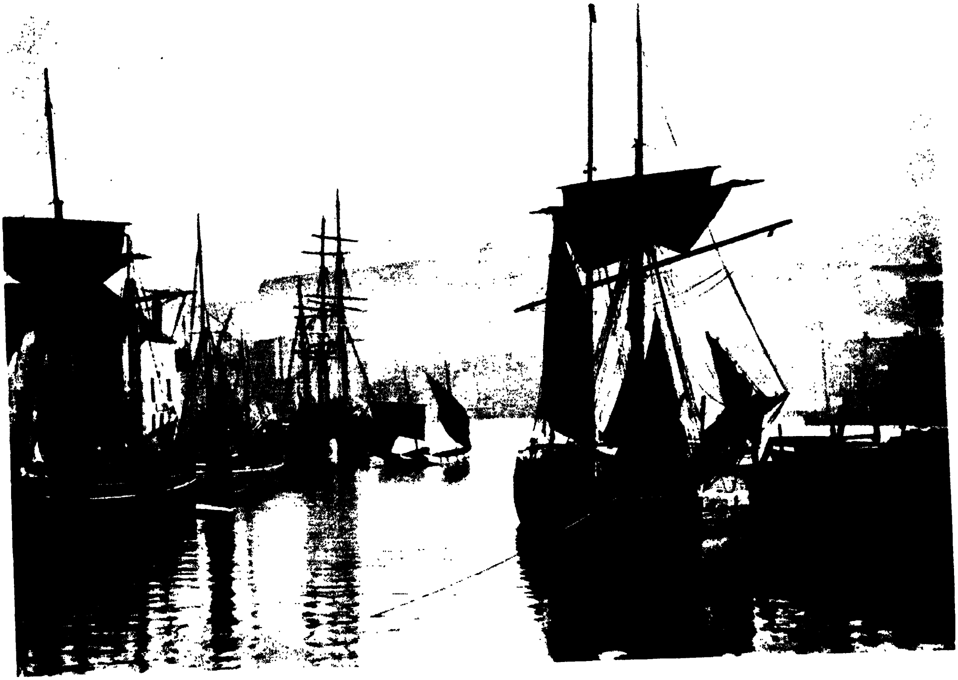
STERN REALITIES

By F. M. Sutcliffe

About 1880

Carbon print, 10″ by 17″

The Royal Photographic Society's Collection



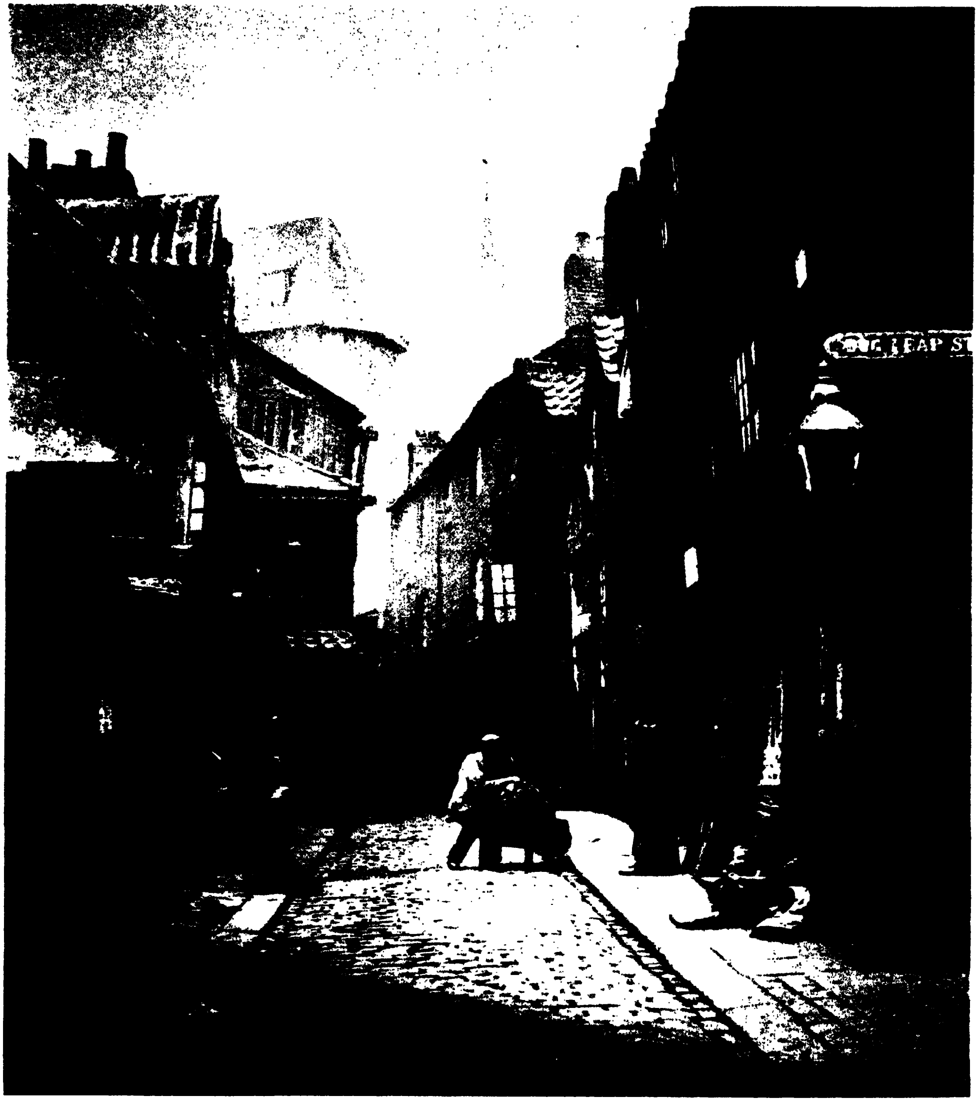
WHITBY DOCK

By F. M. Sutcliffe

1880

Carbon print, 6″ by 8″

The Royal Photographic Society's Collection



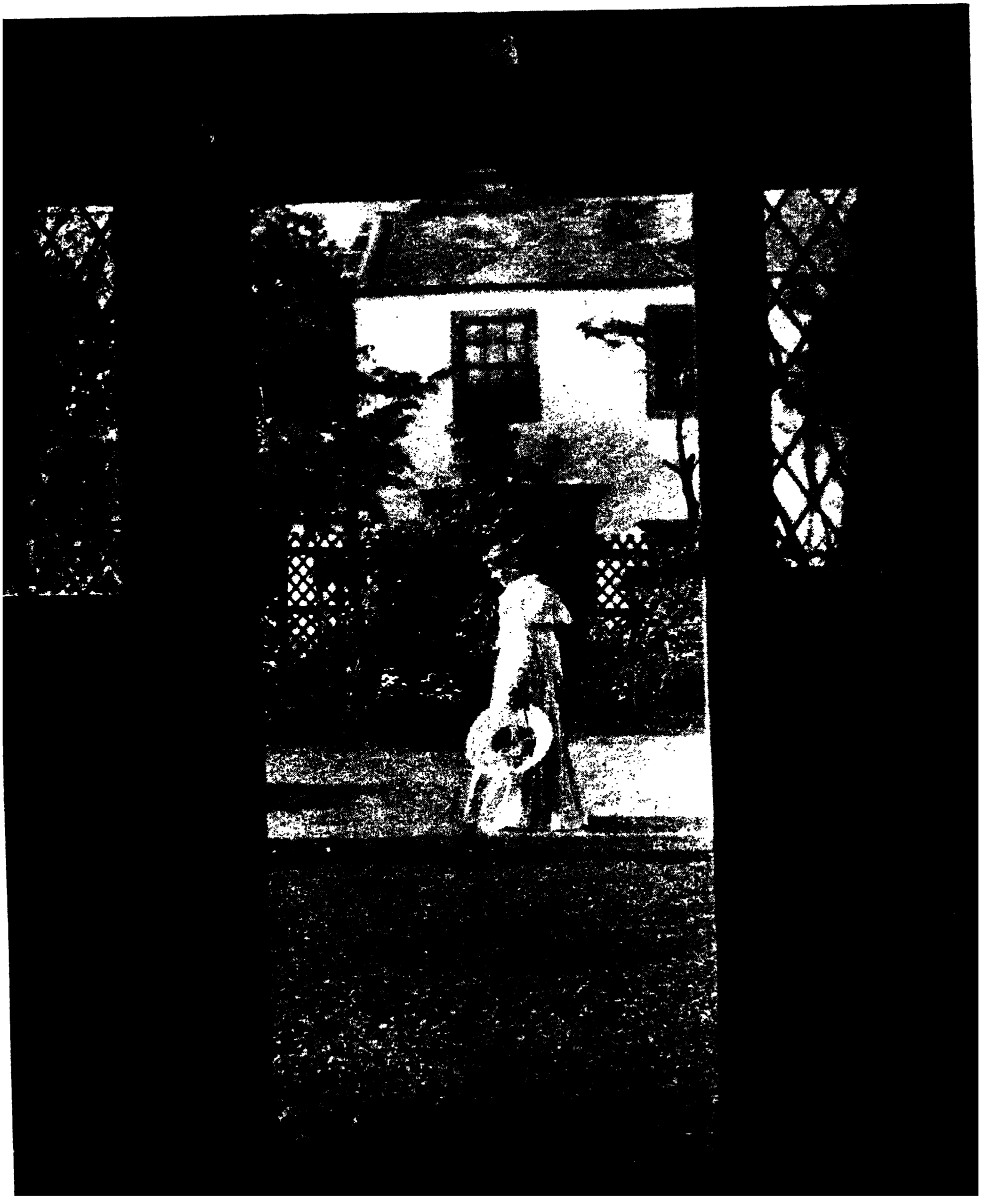
CASTLE GARTH

By Lydall Sawyer

About 1880

Photogravure, 6½" by 7½"

The Royal Photographic Society's Collection



IN A GARDEN FAIR . . .

By James Craig Annan

1897

Carbon print, 16" by 23"

The Royal Photographic Society's Collection

THE NEW PET

By Ralph P. Robinson

1892

Platinum print, 6″ by 7″

The Royal Photographic Society's Collection

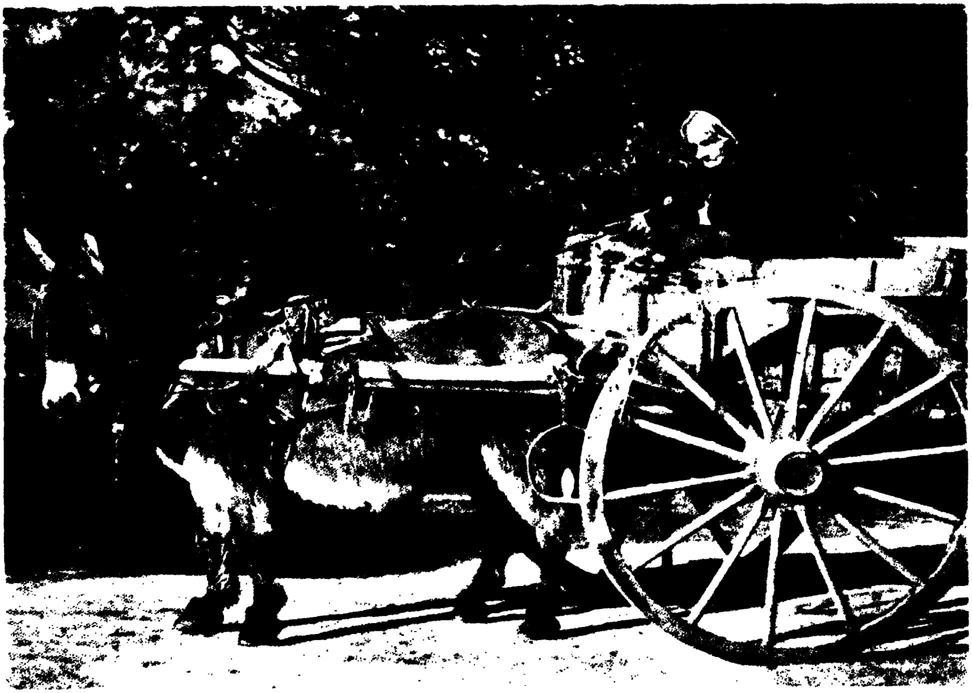
NORFOLK HAYMAKER

By P. H. Emerson

About 1880

Photogravure, 8″ by 11″

The Royal Photographic Society's Collection



DONKEY CART

By an unknown photographer

About 1890

Bromide print, 7″ by 9″

Private Collection

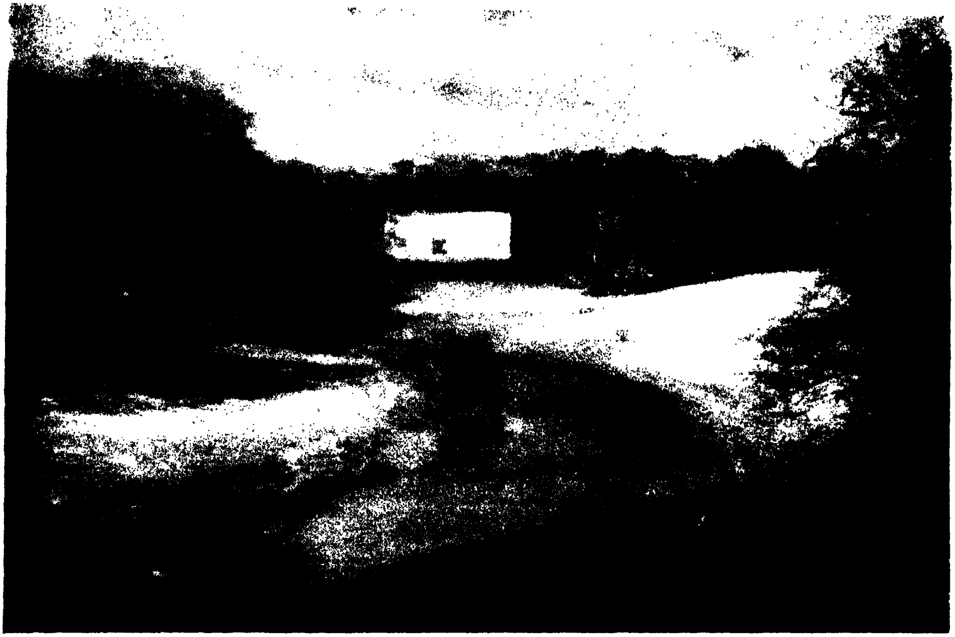
THE RABBIT SHOP

By J. C. Warburg

Gum Bichromate print, 3″ by 4½″

1905

The Royal Photographic Society's Collection



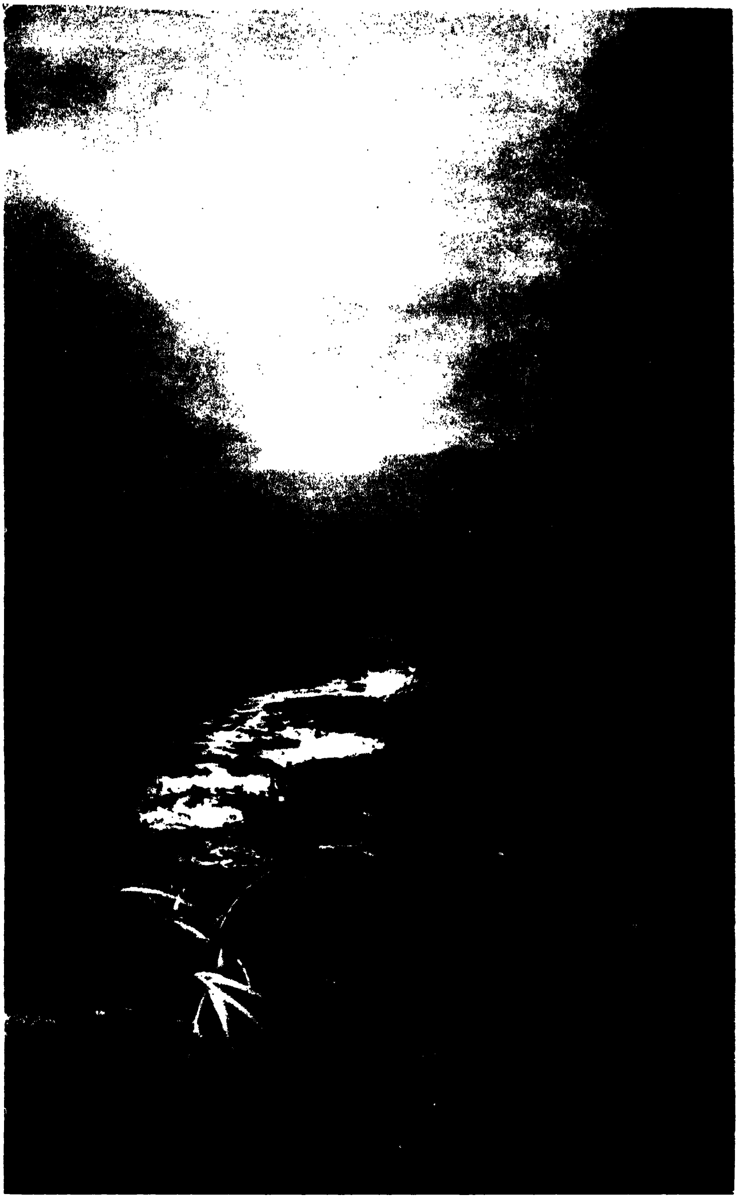
COUNTRY HOUSE

By Eustace Calland

1902

Platinum print, 9″ by 12″

The Royal Photographic Society's Collection



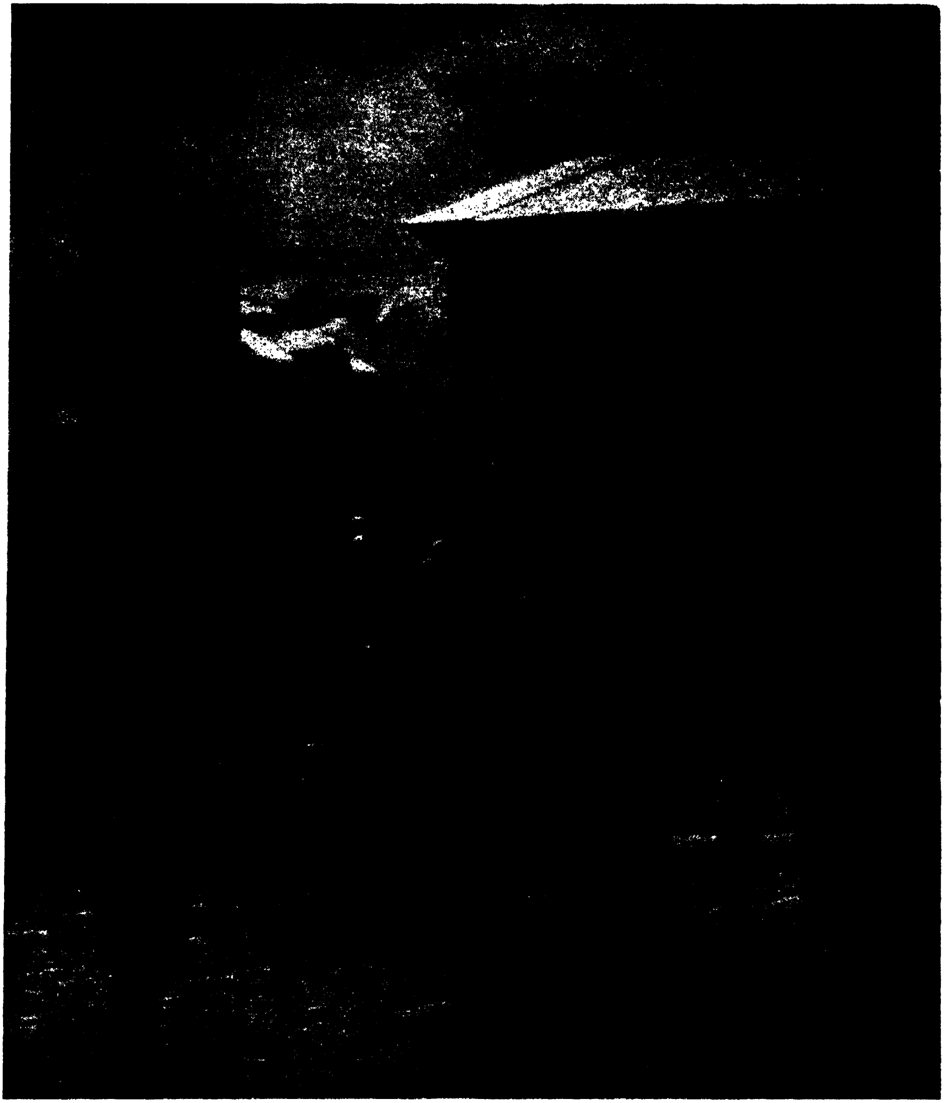
WILDE WASTE

By Alfred Horsley-Hinton

About 1900

Platinum print, 11″ by 19″

The Royal Photographic Society's Collection



SNOW IN THE CITY

By J. Dudley Johnston

1908

Oil print, 10″ by 13″

The Royal Photographic Society's Collection

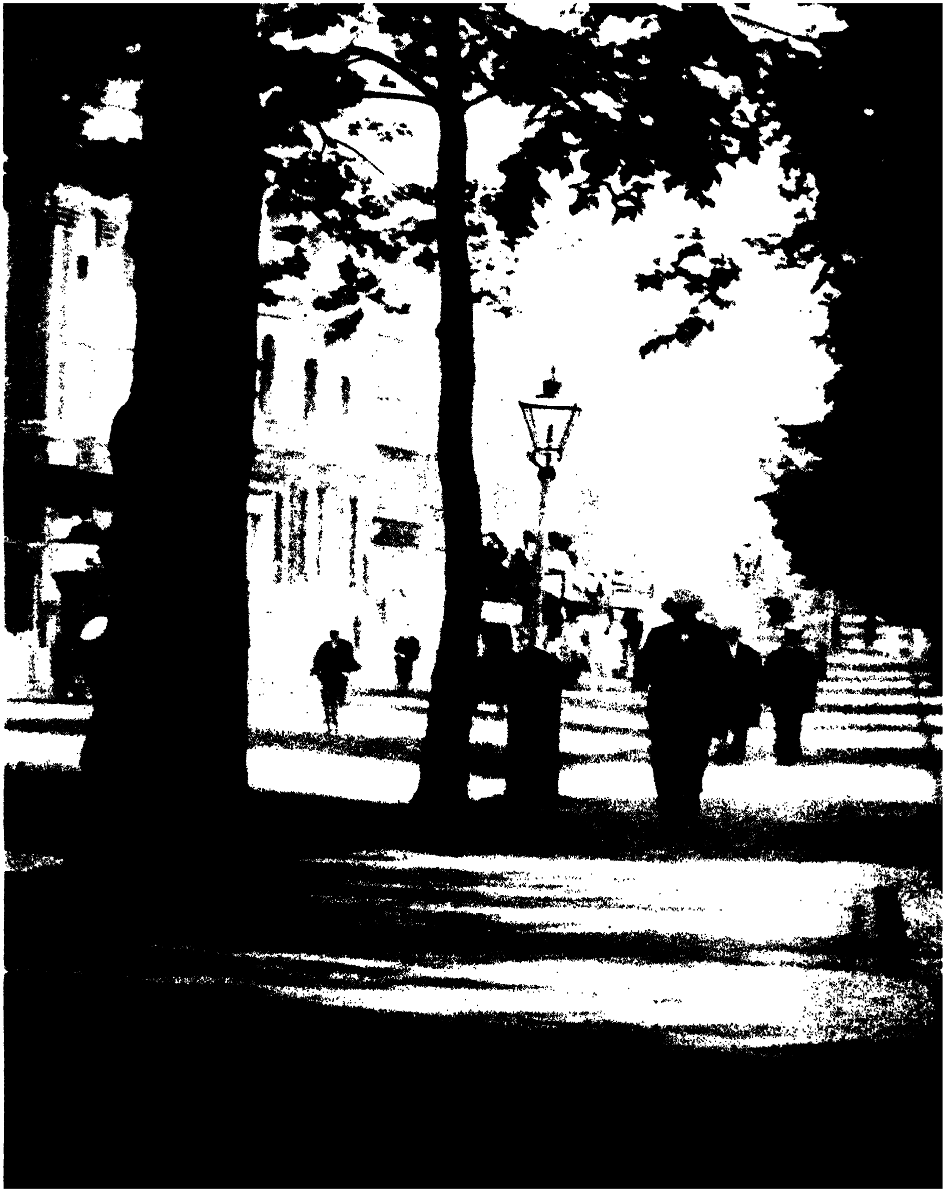
SPIDER WEBS

By Alvin Langdon Coburn

1906

Gum-Platinum print, 10″ by 14″

The Royal Photographic Society's Collection



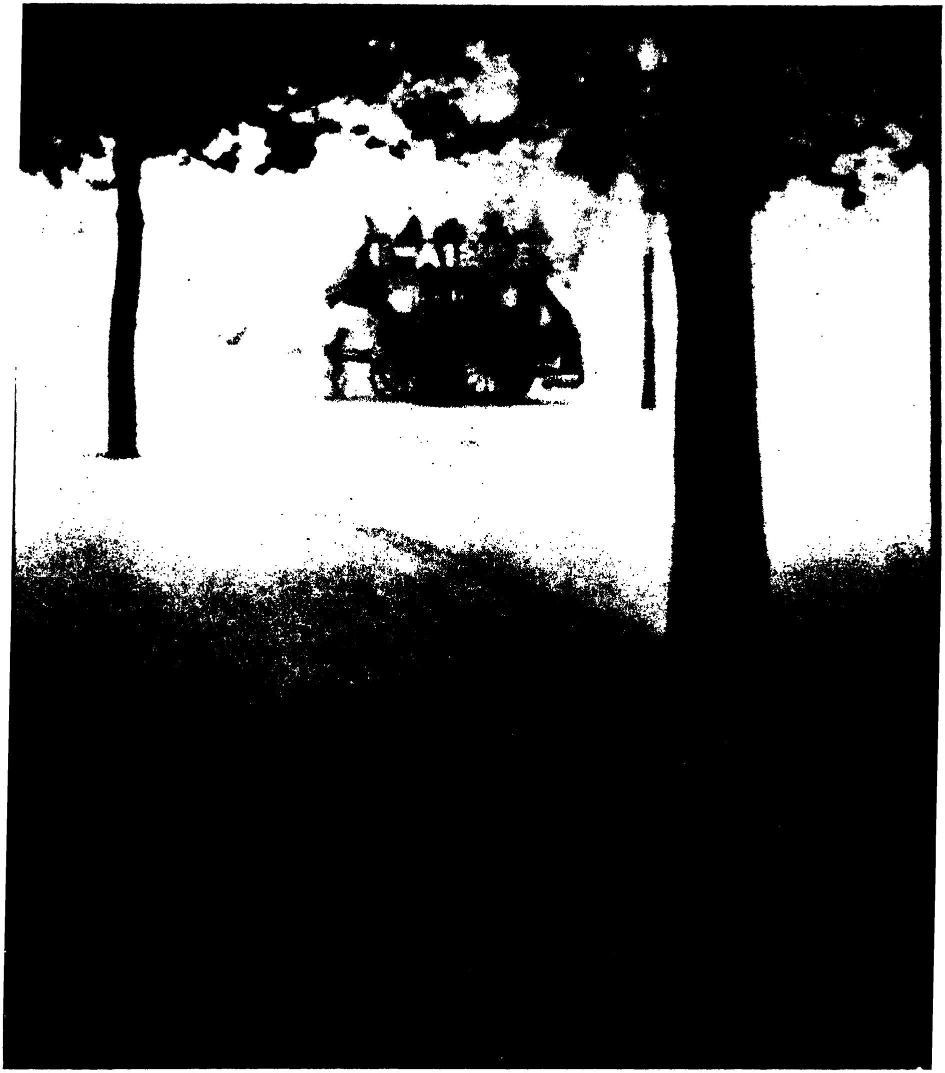
PICCADILLY

By John H. Anderson

1902

Platinum print, 6" by 9"

The Royal Photographic Society's Collection



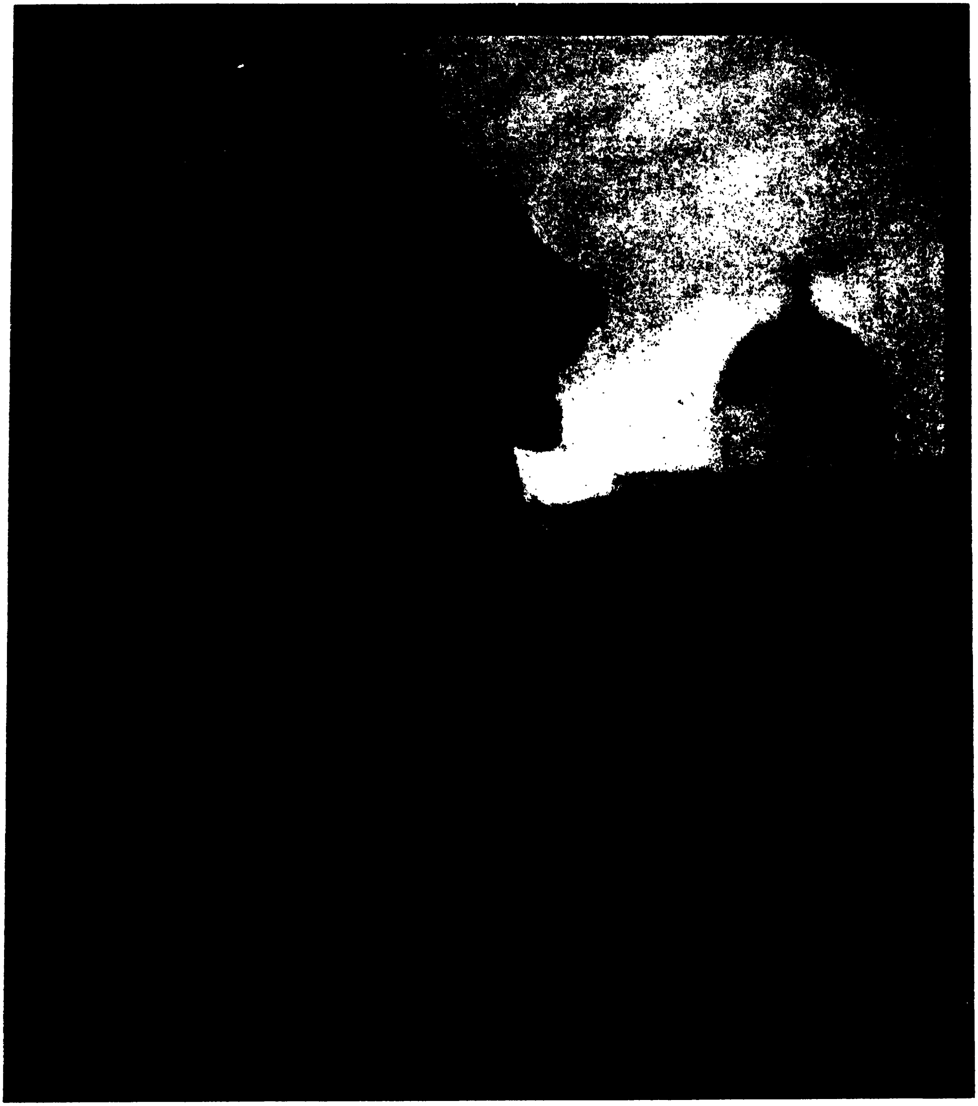
HYDE PARK CORNER

By Alvin Langdon Coburn

1910

Photogravure, 7″ by 8″

The Royal Photographic Society's Collection



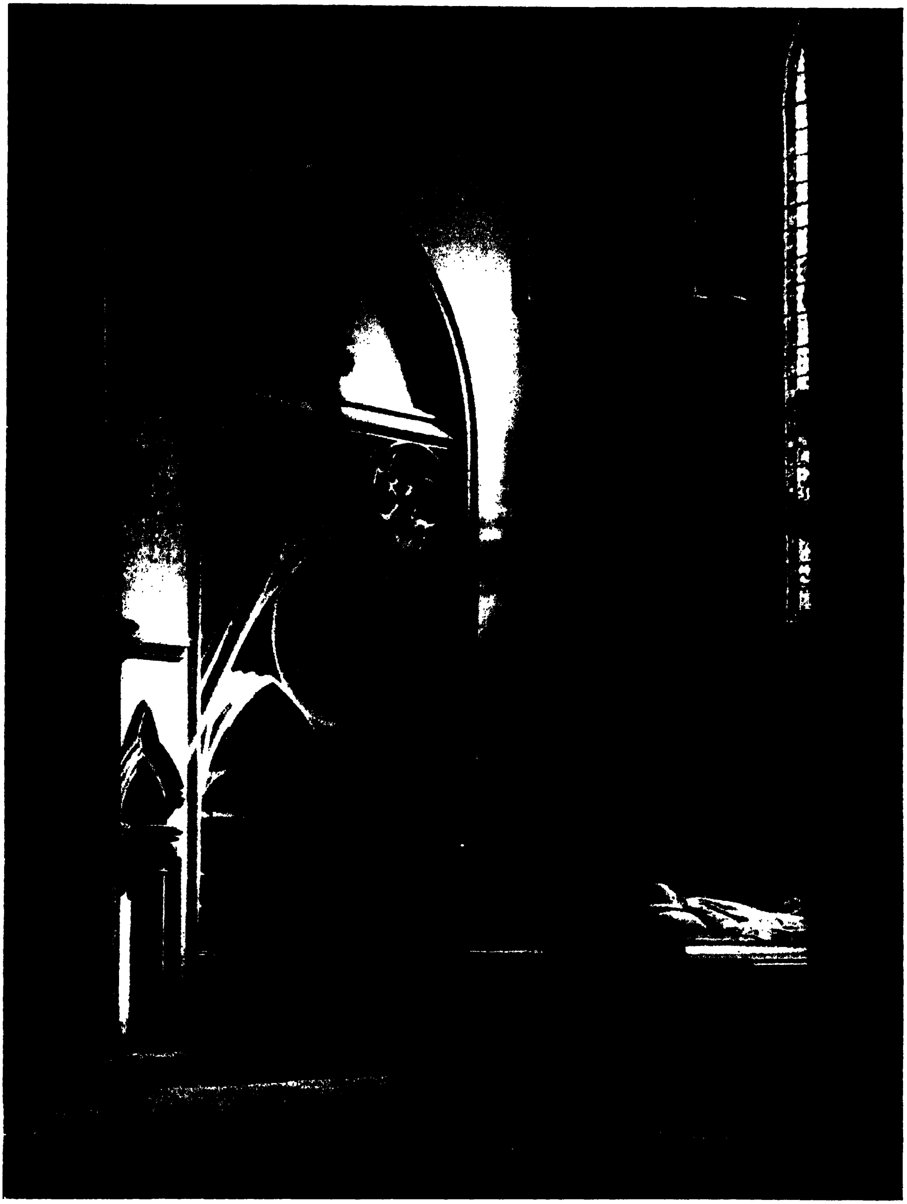
BRITISH LION

By Alvin Langdon Coburn

1910

Photogravure, 7″ by 8″

The Royal Photographic Society's Collection



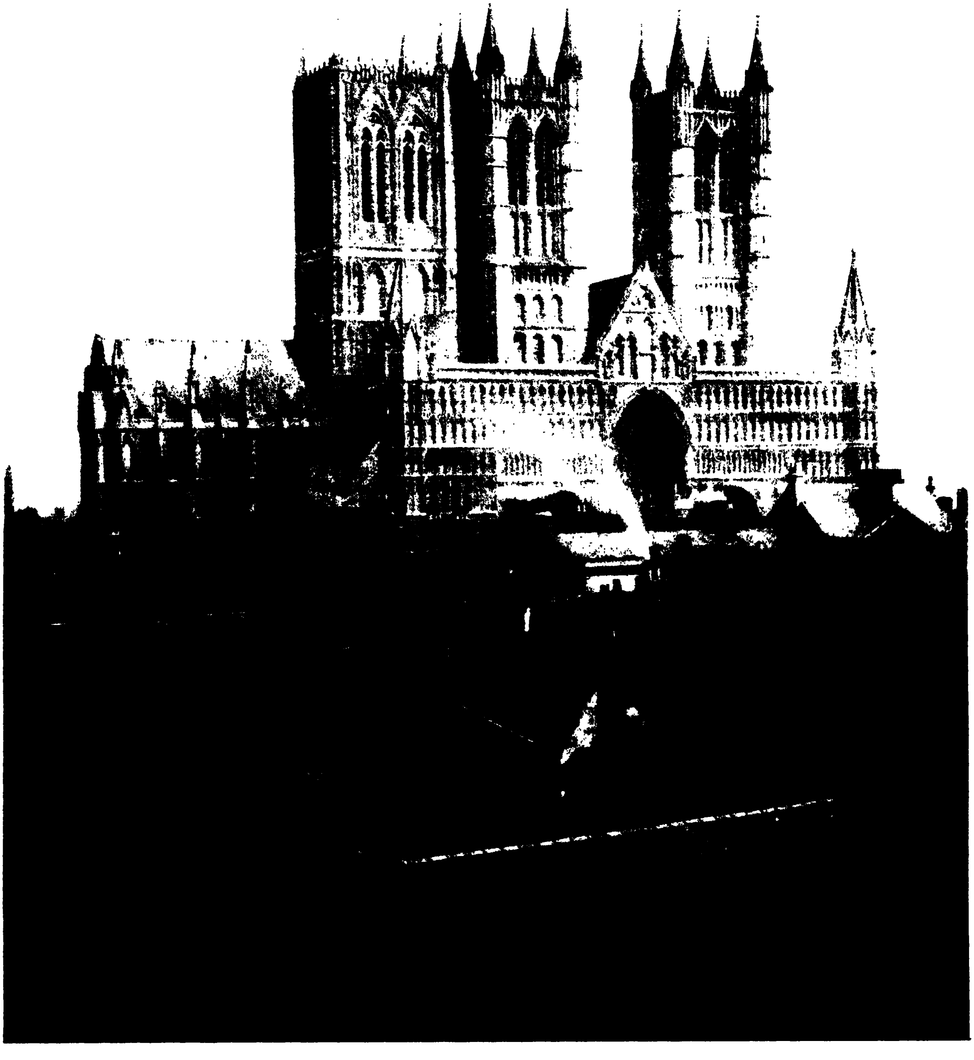
IN SURE AND CERTAIN HOPE . . .

By Frederick H. Evans

1902

Platinum print, 7″ by 10″

The Royal Photographic Society's Collection



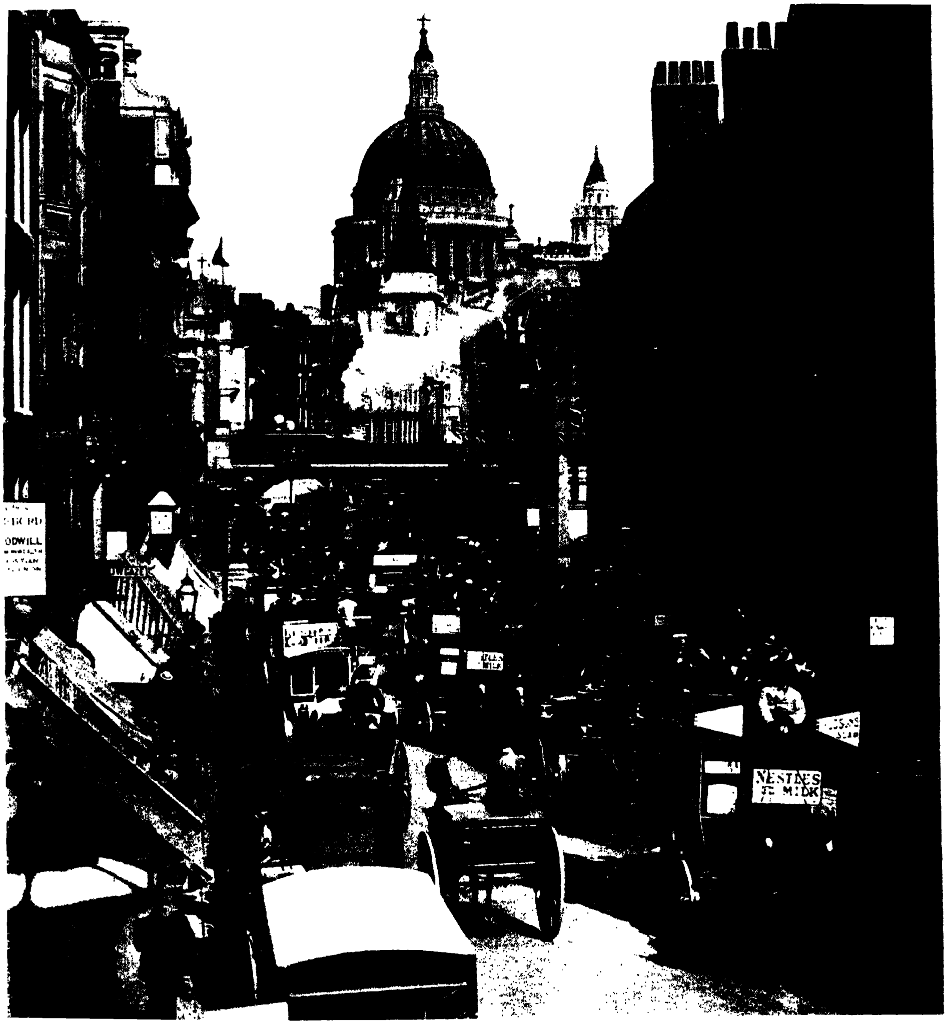
LINCOLN CATHEDRAL

By Frederick H. Evans

1898

Platinum print, 6″ by 8″

The Royal Photographic Society's Collection



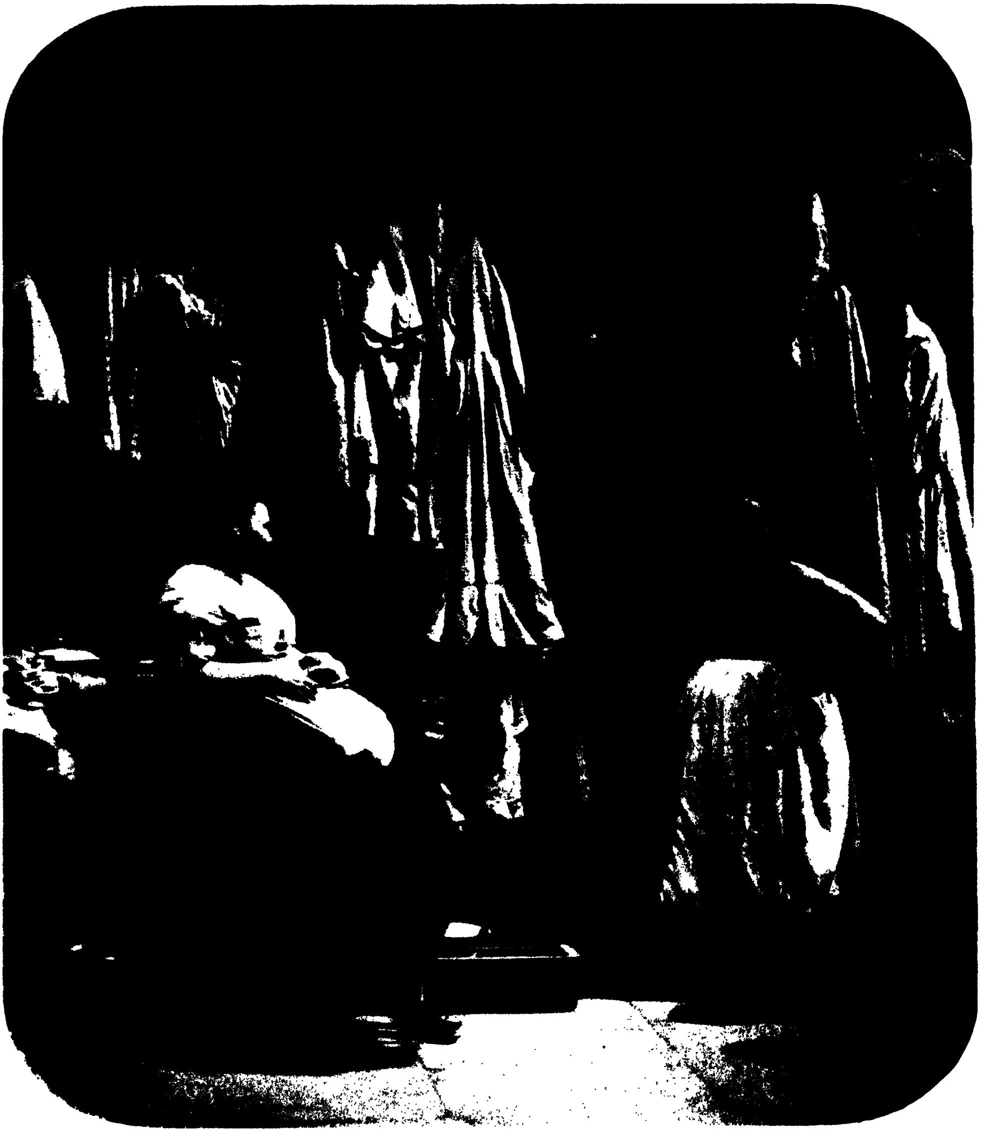
FLEET STREET

By the London Stereoscopic Company

About 1895

Bromide print, 10″ by 12″

Private Collection



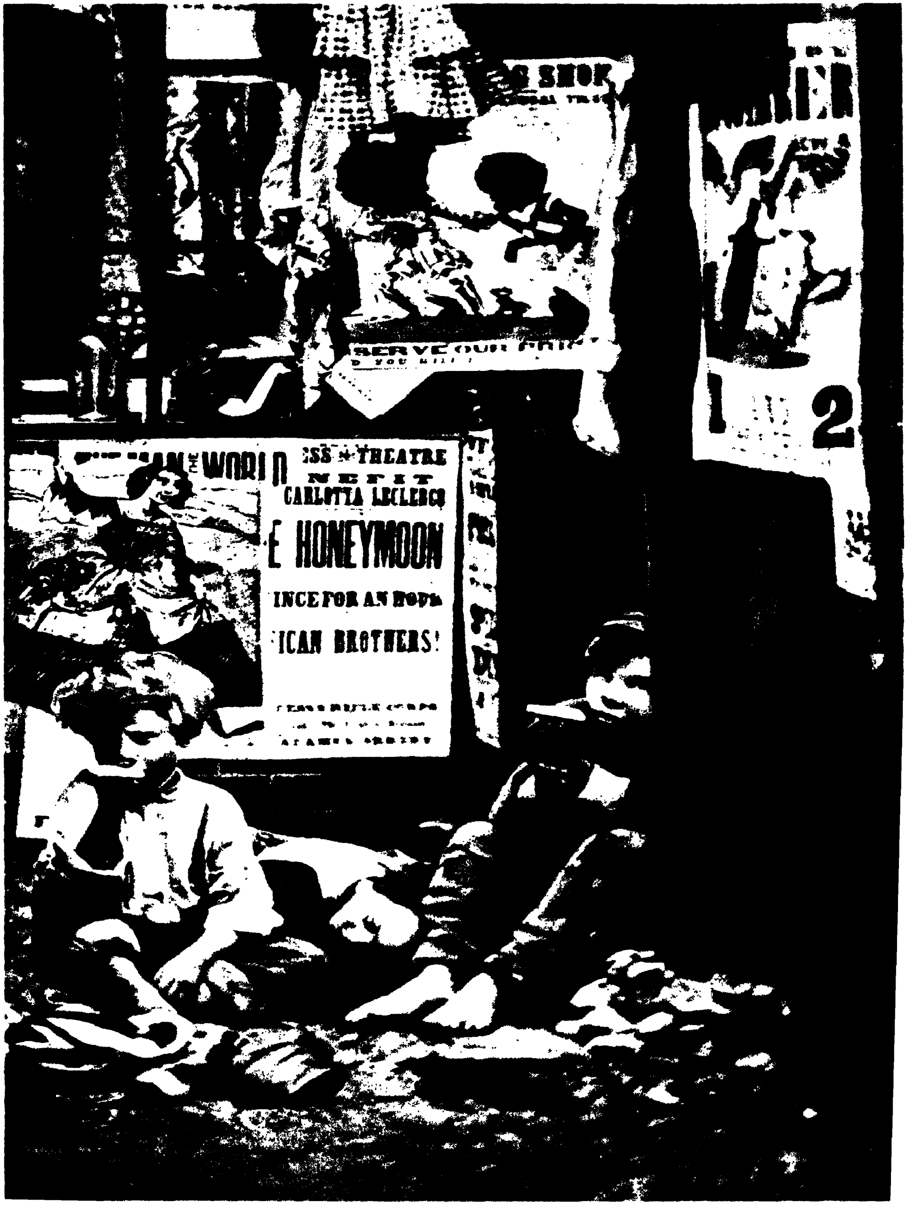
OLD CLOTHES SHOP

By an unknown photographer

1877

Woodburytype, 3" by 4"

Private Collection



STREET ARABS

By the London Stereoscopic Company

About 1868

Cellodine print, 2″ by 3″

Private Collection

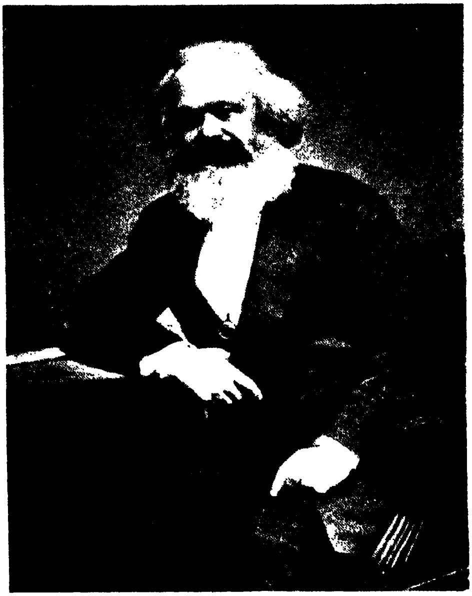
GLADSTONE
By S. A. Walker
Cabinet print, 1890
The Royal Photographic Society's Collection

DISRAELI
By W. & D. Downey
Cabinet print, 1885
The Royal Photographic Society's Collection

HENRY M. STANLEY
By an unknown photographer
Cabinet print, 1890
Private Collection

DR. W. G. GRACE
By Barraud
Chloride print, 9" by 7", 1888
Private Collection

CHARLES DICKENS
By H. Watkins
Carte-de-Visite, 1858
Private Collection



KARL MARX
By an unknown photographer
About 1875
The Focal Press Collection

MICHAEL FARADAY
By Claudet
Daguerreotype, 3½″ by 4½″, 1848
The Royal Photographic Society's Collection

CHARLES DARWIN
By an unknown photographer
About 1850
The Focal Press Collection

QUEEN VICTORIA

By Byrne & Co.

1888

Cabinet print

The Royal Photographic Society's Collection

THE PHOTOGRAPHERS

The photographers, represented in this book by illustrations, are indexed in alphabetical order. The room given to each artist is not in every case to be regarded as indicative of his or her true importance to Photography. Much biographical material may be available with regard to one photographer and almost nothing be known about another, though their work may be of equal value. The figures at the end of each biographical note are the numbers of pages on which the artist in question is also referred to: 27 indicates text matter, 72 illustrations.

JOHN H. ANDERSON

An amateur photographer of great ability and subtle taste. *102*

JAMES CRAIG ANNAN

Born 1864 in Glasgow, where his father was established as a professional photographer. Growing up in the atmosphere of his parents' business, he quite naturally became interested in photography and art in general. After studying chemistry and natural philosophy he went to the continent for further training. On his return to England he took over his father's portrait studio. His heart, however, was with pictorial work and, in this field, he soon became one of the outstanding artists of his time. In America he was regarded as the "real leader of British pictorial photography". His favourite printing processes are the Carbon, the Platinum and also the Photogravure technique which he had introduced to England from Vienna. One of his main achievements is the preservation of D. O. Hill's work by re-photographing the original prints which threatened to perish due to deterioration of the paper. In 1924, Annan was made a Honorary Fellow of the Royal Photographic Society. *93*, 114, 116

BARRAUD

Well-known portrait, stage and society photographer in London at the end of last century. *110*

BYRNE & CO.

Professional photographers in Richmond, Surrey, specializing in "at home" portraiture. *112*

EUSTACE CALLAND

An amateur with pictorial photography as his favourite field. Printed mainly in Platinum. *98*

JULIA MARGARET CAMERON

Born 1815 in Calcutta. At the age of twenty-two she married Charles Hay Cameron, who was a member of the Council of Calcutta and, in private life, a philosopher and philanthropist. She and her husband came to England at the beginning of the 'sixties and settled down in Freshwater, I. O. W. Their home soon became a meeting-place for their many intellectual friends: Darwin, Ruskin, Longfellow, Tennyson, John Herschel, Ellen Terry—to mention only a few—were frequent visitors. The whole atmosphere of the house was that of a distinguished, cultured and highly individualistic family of Victorian society with strong leanings towards the Pre-Raphaelite movement. Mrs. Cameron herself was one of the most interesting figures in this interesting setting. Plump in appearance, she combined enormous vitality with great intensity of feeling and "picturesque behaviour".

She took up photography in 1865 and her whole household had soon to adjust itself to her new hobby. Every visitor, whether prince, scholar or village girl was forced to sit for her camera in the glazed hen-house which had become her studio. She used a large-sized camera with a 12" lens and a fixed stop of F7. Every exposure lasted between three and five minutes and she exposed sometimes hundreds of plates in order to obtain the result she wanted. Soon she attained a high technical efficiency; as regards general outlook and imaginative treatment of her subjects she was far ahead of almost every contemporary photographer. Her work was strongly influenced by her intellectual background and often lost itself in a maze of sophisticated allegorism, but was always of definite pictorial appeal. Her strongest side, as we see it to-day, was portraiture. She was undoubtedly the foremost artist of the Collodion period, much discussed, rebuked and scoffed at by her humdrum colleagues, but admired by her highbrow friends.

In 1875, she accompanied her husband to Ceylon, where she died in 1887.
39, 45, 59, 60, *80-85*

CLAUDET

Born 1797 in France. He came to England when he was thirty. In 1839, he learned the Daguerreotype technique from Daguerre himself. After obtaining the licence for England, he set up a portrait studio in London. Having found a means for increasing the sensitiveness of the plates, he obtained the right to call his method "Claudet process", although his photographs were in every sense Daguerreotypes. Efficient photographer and business man. He died in 1867. *65*, *111*

ALVIN LANGDON COBURN

Born 1882 in Boston, U.S.A., he began his photographic career as a boy of eight. Fifteen years later he was one of the most active figures in American photography and a friend of almost every contemporary photographer of reputation from Demachy to Steichen. He travelled a great deal and lived for a long time in Paris. Later he made England his second home. Amongst other work, he produced the two great picture series "Men of Mark" and "London". Like James Craig Annan, he re-photographed Hill's original prints and reproduced them in photogravure. He was regarded as one of the outstanding pictorial photographers and portraitists of his time. GEORGE BERNARD SHAW said of him that he had "the most remarkable command of the one real technical process in photography—printing." His favourite process is the Gum-Platinum method, of which he is the inventor. He has now retired from his activities and lives in Wales. *101*, *103*, *104*, 116

W. & D. DOWNEY

Professional portraitists in London. *110*

P. H. EMERSON

Born 1856 in Cuba, he was educated in England and studied medicine. He abandoned his medical career, however, and went to Norfolk, where he settled down to writing books on country life, especially on the Norfolk broads. All his books are illustrated by a great number of photographs in which he admirably succeeded to convey the charms and beauty of rural atmosphere and surroundings. For his photographic work he received a great number of medals and other awards. His book *Naturalistic Photography* aroused great interest but also much controversy. During the last years of his life Emerson compiled a *History of Photography*. He died in 1936. *95*

FREDERICK H. EVANS

Born 1853. Bookseller and Art Collector, a lover of music, friend of many poets and writers who used to come to his bookshop in the City of London for long discussions on Art and Philosophy. GEORGE BERNARD SHAW called him "a man of fragile health to whom an exciting performance of a Beethoven symphony was as disastrous as a railway collision to an ordinary philistine . . . but his condition never prevented him from doing anything he really wanted to do, and the things he did would have worn out a navvy in three weeks."

Evans' main interest was architectural photography. His pictures of the English cathedrals are unique in their delicate beauty. He believed in a straight and pure technique, never "doctored" his negatives, favoured the Platinum print. In his later years he sold his bookshop, moved to the Epping Forest and devoted himself exclusively to his hobby. He is still considered the greatest figure in English architectural photography. *105, 106*

ROGER FENTON

Born 1819. A lawyer by profession, he gave up his legal career for the sake of photography. The sobriety and matter-of-factness of his legal mind seem, however retained in his photographic work. There is nothing "artistic" about it; both his landscapes and his architectural pictures are simple and straightforward reproductions of nature, giving the impression of impartial "documentary evidence" rather than of personal views and outlook. Seen from this angle they are of great interest and, æsthetically satisfying. Fenton was very efficient both with "waxed paper" negatives (an improvement on the "Calotype" process) and with Collodion plates. He was one of the founders of the Royal Photographic Society.

His main achievement was the recording by photography of the Crimean War in 1855. Parts of a lecture he has given on this adventure are reproduced in the first part of this book.

In 1862 Fenton sold his photographic equipment and all his plates and resumed his profession as a lawyer. He died in 1869. 37 seq., 50, *77-79*

DAVID OCTAVIUS HILL

Born 1802 in Perth, he was educated and studied art in Edinburgh where he established himself as a painter. In 1829 he became Secretary of the Royal Scottish Academy, a position which he occupied for forty years.

As a painter he seems to have been distinguished, if not exactly brilliant. To-day his work is hardly known any more. It was his brief episode as a photographer which made him an outstanding figure in the field of Art. His first contact with Calotype photography took place in 1843. At that time he was engaged in painting a large canvas of 500 members of the Free Church of Scotland. A friend advised him to use a camera for the purpose of recording the features of his numerous models as this would save them—and also him—tedious hours of sitting. As Hill did not know anything of camera technique he engaged a young chemist, Robert Adamson by name, for taking charge of the technical side. The camera used was a simple wooden box—probably "home-made"—fitted with a landscape lens. The exposure times varied from three to six minutes in sunlight.

The team idea worked well, and after having achieved his first object, Hill went farther afield and portrayed almost the whole intellectual world of Edinburgh and a great many members of the Scottish nobility and society, but he was not less interested in the common citizen. He received his sitters in his house in Carlton Hill, but often took the camera with him into the streets of Edinburgh or whenever he set out for a trip, and photographed what he saw: soldiers, sailors, fishermen and other "types" which he encountered. During a period of five years he and Adamson created hundreds and hundreds of pictures, all of them equally excellent in their freedom of treatment and their unconventional broad pictorial effects, so surprising at a time when people were accustomed to the minute sharpness of the Daguerreotypes. Hill was a genius in placing and posing his sitters and in using the sunlight for purposeful modelling. In the whole history of Photography there was hardly anybody else who, in such a relatively short span of time, has produced a similar number of brilliantly conceived and executed photographs.

In 1848, Adamson died and Hill's photographic work came to a sudden end. He returned to his painting and never again touched a camera. He died in 1870.

Most of Hill's original negatives and prints have faded badly and would by now have been lost but for the helpful initiative of Annan and Coburn who re-photographed Hill's pictures before it was too late. We have to give credit to these two photographers for preserving for posterity the "most outstanding collection of photographs produced at the very threshold of the Photographic Era". 9, 10, 20, 36, 57, 59, *68-75*, 113, 114

ALFRED HORSLEY-HINTON

Born in 1830. Interested in art since his early childhood, he took up photography as a side-line, but devoted himself soon fully to photographic journalism. For many years he was contributor to and editor of the *Photographic Art Journal* and the *Amateur Photographer*. His strongest side and favourite subject was landscape photography, which he approached from a new and personal angle. He was also an efficient combination printer. Died in 1908. *99*

J. DUDLEY JOHNSTON

Born 1868 in Liverpool. He entered a commercial career in 1883, at the same time studying art and music. He became director of the Liverpool Philharmonic Society in 1911.

In 1893, when going on a trip to Norway, Johnston acquired a camera. He wanted to take photographs of his journey instead of making water-colour sketches as he had done previously. Ever since, he has been keenly interested in photography. When he moved to London in 1912, he became an officer of the Royal Photographic Society. He has been one of its Exhibition judges since 1916, was President twice, and has been Honorary Curator of the Permanent Collection for almost twenty years. Johnston is one of the leading British pictorialists, of fine taste and great technical efficiency. His favourite printing media are the Gum and Platinum processes. *100*

LONDON STEREOSCOPIC COMPANY

An establishment for the production of stereographs. During the latter half of last century it was a favourite family pastime to spend an evening looking through stereoscopes. They were a sort of forerunner of our present-day home cinemas. Queen Victoria herself ordered an apparatus at the Great Exhibition in Hyde Park. The demand was mostly for scenic views, landscapes and travel pictures and there were several firms supplying them. The London Stereoscopic Company was one of them, but as a special line it produced a number of comic genre series which seemed to have great success. Strangely enough, these somewhat burlesque pictures are to-day almost the only photographic records of Victorian domesticity and street life, and as such deserve our interest. *107*, *109*

O. G. REJLANDER

Born 1803, the son of a Swedish officer. After finishing his general education in Sweden, he went to Rome where he studied art, specializing in painting and sculpture. He travelled much, lived for some time in Paris and finally settled down in England. He became interested in photography in the year 1852 and decided to become a photographer. The way he set about it was very characteristic of him:

" . . . Having enquired in London for the best teacher, I was directed to Henneman. He agreed for so much for three or five lessons, but, as I was in a hurry, I took all the lessons in one afternoon. Three hours in the Calotype and Waxed paper process, and half an hour sufficed for the Collodion process. He spoke, I wrote, but I was too clever. It would have saved me a year or more of trouble and expense, had I attended carefully to the rudiments of the art for a month."

After this "training" Rejlander opened a studio in Wolverhampton. He became an efficient photographer, trying, in his queer way, to "make photography an art". His draped studies and his elaborate combination printing were the outcome of this ambition.

Personally, Rejlander was a "genial soul and pleasant companion" and he took an active part in the activities of the Solar Club and the Royal Photographic Society. He spent his last years in London and died in 1875. As a member of the Artists' Rifle Volunteer Corps he was buried with military honours. 60 seq., *86*, *87*

HENRY PEACH ROBINSON

Born 1830 in Ludlow, he studied etching, sculpture and painting and exhibited in the Royal Academy. He was interested in Archæology and Literature and a lover of Nature. At the age of twenty-two, he became an amateur photographer. This was the start of "one of the most active careers that British photography has witnessed". Soon, he entered a studio in Leamington, thus making photography his profession. For the following thirty years he was one of the leading pictorialists in England and became the "most be-medalled photographer of the world". His main interest lay in composite photography, in which he surpassed Rejlander. His subjects were not always approved of, but his prints admired as regards their technical execution. They earned him the reputation of a "photographic magician" and were sold at £4 apiece.

Apart from being a photographer, Robinson was a prolific writer on photographic subjects. He is the author of several books and innumerable articles. In 1887, he became Vice-President of the Royal Photographic Society and in 1900 an Honorary Fellow. He died in 1901. 62 seq., *88*, *89*

RALPH P. ROBINSON

An amateur photographer with many fine specimens of Platinum printing to his credit. *94*

LYDELL SAWYER

Born 1856, a son of a portrait painter, he grew up amidst artistic surroundings. "I was born in photography, nursed in it, and have been continually 'soaked' in it ever since." Father, brothers, uncles, cousins—all were photographers. At sixteen, he was responsible for a big studio in Newcastle, but still found time for much travelling. Interested in art and music. All this is reflected in his work, in which he was guided, as he once wrote, by Chesterfield's words: "Style is the dress of the thoughts." Fondest of genre photography, in which he became a master. *92*

FRANK M. SUTCLIFFE

Born 1859, the son of a Leeds artist. He wanted to be a painter, like his father, but was sent to a brewery as a clerk. He detested his job and when his parents moved to Whitby they allowed him to give up the commercial career and to study photography. In 1875, he opened a studio as a portraitist, but his real interest was in landscape and scenic photography. Partly because his heart was in it, and partly because of the necessity to supplement his income, he was "driven to become the pictorial Boswell of Whitby and to reveal to the whole of Britain the beauties of form, of light and shade, of the sea life, the farm life, the moorland life of this delectable neighbourhood." His pictures of Whitby travelled around the whole world and appeared in every international exhibition. Between 1881 and 1902 he received more than sixty medals. His early work was done on wet Collodion plates, after 1880 he used Gelatine Dry plates. Measured by our present standards these plates were incredibly slow, and Sutcliffe's models and groups had to be posed and kept in position for long periods. That they appear, nevertheless, so charmingly natural was one of his greatest achievements.

Sutcliffe has written extensively on photography, mostly in the *Yorkshire Weekly Post*. In 1923, at the age of seventy, he became Curator of the Whitby Museum. One year before his death he was made an Honorary Fellow of the Royal Photographic Society. He died in 1940. *90, 91*

WILLIAM HENRY FOX TALBOT

Born in 1800, he became a scientist, mainly engaged in physical research. He had also a good knowledge of mathematics, botany, linguistics and English etymologies. A man of means and culture, a lover of Art, widely travelled. His home was at Lacock Abbey.

Talbot began his photographic research work when he was thirty-three years old. At that time he already knew that certain silver salts were sensitive to light. After many years of continuous labour he succeeded in evolving the first negative-positive technique in photography. He called his invention "Calotype" process, to-day it is better known as the "Talbotype" technique. How Talbot was prompted to start his researches, how he proceeded, how he overcame setbacks and how his final success was overshadowed by Daguerre's spectacular invention, was described by him in his book *Pencil of Nature* which contained the first series of photographs ever published. The reader will find his account in the first part of this book.

Talbot continued to interest himself in photography throughout his life. He was greatly assisted in his work by Sir John F. W. Herschel, the famous chemist, who was his close friend. Talbot made many more inventions and discoveries in the photographic field and much of our present knowledge about enlarging, micro-photography and photo-mechanical reproduction is based on his experiments. He even foresaw the possibility of infra-red photography.

Talbot was a retiring, modest, and—perhaps—not over-generous man. He had almost all his inventions and processes patented. This may have been reasonable and business-like but it reduced the general usefulness of these processes for long periods. Nevertheless, Talbot's services to Photography are of the first order and his name will always figure amongst the great in this particular branch of science. He died in 1877. 8, 18, 22, 23, 29 seq., 36, 45, 56, 57, 58, 65, *66*, *67*

S. A. WALKER

Professional portrait photographer in London. *110*

J. C. WARBURG

A keen amateur photographer, particularly interested in colour photography. He exhibited for many years in almost every international exhibition. Very individualistic and imaginative, efficient in several pigment methods. He died in 1932. *97*

H. WATKIN

Professional London portraitist. *111*

PHOTOGRAPHING PEOPLE

By Hugo van Wadenoyen, F.R.P.S., F.I.B.P.

Photographic portraiture has changed a lot. The technique has changed and the spirit has changed with it. The place of the painting-like solemn camera portraits has been taken by candid records of people's faces. They look casual but lively, unposed but sincere, simple but concentrated. There is purposeful craftsmanship behind the best examples. The aims, the means and the stunts of the new ways are explained in this book by a photographer who is a professional by fate and an amateur in heart. Price **12/6**

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By Lancelot Vining, F.I.B.P., A.R.P.S.

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THE ALL-IN-ONE CAMERA BOOK

By W. Emanuel and F. L. Dash

This is a general text-book of photography; but it is different. It makes every effort to avoid presenting good photography as more difficult than it really is: a pleasant hobby with a technical background, which can be made as easy to understand fully as taking photographs itself. This book emphasises the essential rules without leaving out details. Colour photography appears as a natural part of modern amateur work. Price **7/6**

ALL THE PHOTO-TRICKS

By Edwin Smith

A hundred years ago photography seemed to be magic; to-day we know that it can be magic. Thousandfold are the secrets of trick photography. Startling pictorial effects, fantastic variations of reality, amusing deceptions of the human eye and even political propaganda are worked through it. The author of this book watched for years the means and methods of photographic magicians. He is himself one of them. Freely does he give away the technique, the tricks and the ideas of a long experience. Price **10/6**

CRAZY CAMERA

By Claude A. Bromley

Photographic fakes will never fail to have their effect even on people who have heard about the possibilities of photomontage. Claude A. Bromley, in this book, gives away its tricks and stunts with an open hand. He invites Old and Young to follow his path of success to crazy photography, pasting together a world which may sometimes look bewildering but promises all the fun of a fantastic Wonderland. It is a tonic against photographic black outs. Price **6/-**

00981

OF thrilling inventions there were many in the Victorian era. Yet probably no other caught the imagination of the age as photography did. This imagination worked in terms of its own time. Pictures meant much more to our grandfathers than they do to us. They were not flooded with them as we are to-day. They took them, in a sense, more seriously. This is how they succeeded in picturing so intensely the spirit and the ideas of their day. Thus Victorian photographs mirror more sharply the Victorian outlook and Victorian dreams than everyday life in Victorian homes and Victorian streets. To appreciate them, it is wiser to rely on comments from that age than on the criticism of ours. This book unfolds historic pages of pictures and documents. It records the struggle with a quaintly primitive technique. It reproduces masterpieces which that technique achieved. Both the technique and what it led to are very different from photography as we know it and as we use it. But there is much we can learn from the camera views of yesterday. At the least, they will set us wondering whether our own standards of photography are as timeless as the Victorians believed theirs to be.